



DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

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[4500030113]

RIN 1018–AZ17

Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Olympia Pocket Gopher, Roy Prairie Pocket Gopher, Tenino Pocket Gopher, and Yelm Pocket Gopher, with Special Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), determine threatened species status under the Endangered Species Act of 1973 (Act or ESA), as amended, for four subspecies of the Mazama pocket gopher found in Thurston and Pierce Counties of

Washington State: the Olympia pocket gopher (*Thomomys mazama pugetensis*), Roy Prairie pocket gopher (*T. m. glacialis*), Tenino pocket gopher (*T. m. tumuli*), and Yelm pocket gopher (*T. m. yelmensis*). We are also promulgating a special rule under authority of section 4(d) of the Act that provides measures that are necessary and advisable for the conservation of the Mazama pocket gopher. The effect of this regulation is to add these subspecies to the list of Endangered and Threatened Wildlife, extend the Act's protections to these subspecies, and establish a 4(d) special rule for the conservation of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers.

DATES: This rule becomes effective [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

ADDRESSES: This final rule is available on the internet at <http://www.regulations.gov> and <http://www.fws.gov/wafwo/mpg.html>. Comments and materials we received, as well as some of the supporting documentation we used in preparing this rule, are available for public inspection at <http://www.regulations.gov>. All of the comments, materials, and documentation that we considered in this rulemaking are available by appointment, during normal business hours at: U.S. Fish and Wildlife Service, Washington Fish and Wildlife Office, 510 Desmond Drive, Lacey, WA 98503; telephone 360-753-9440, facsimile 360-534-9331.

FOR FURTHER INFORMATION CONTACT: Ken S. Berg, Manager, Washington Fish and Wildlife Office, 510 Desmond Drive, Lacey, WA 98503, by telephone 360-753-9440, or by facsimile 360-534-9331. Persons who use a telecommunications

device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800–877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species may warrant protection through listing if it is endangered or threatened throughout all or a significant portion of its range. Listing a species as an endangered species or threatened species can only be completed by issuing a rule

*This rule will finalize the listing of the Olympia pocket gopher (*Thomomys mazama pugetensis*), Roy Prairie pocket gopher (*T. m. glacialis*), Tenino pocket gopher (*T. m. tumuli*), and Yelm pocket gopher (*T. m. yelmensis*) as threatened species under the Act. This rule also establishes a special rule under section 4(d) of the Act to provide for the conservation of the Mazama pocket gopher. Critical habitat for these four subspecies of the Mazama pocket gopher is published elsewhere in today’s **Federal Register**.*

The basis for our action. Under the Act, we can determine that a species is an endangered or threatened species based on any of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C)

Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. We have determined that the four Thurston/Pierce subspecies of the Mazama pocket gopher are negatively impacted by one or more of the following factors to the extent that each of these subspecies meets the definition of a threatened species under the Act:

- Habitat loss through conversion and degradation of habitat, particularly from development, successional changes to grassland habitat, military training, and the spread of woody plants;
- Predation;
- Inadequate existing regulatory mechanisms that allow the impacts of significant threats such as habitat loss; and
- Other natural or manmade factors, including small or isolated populations, declining population or subpopulation sizes, and control as a pest species.

We are promulgating a special rule. We are exempting from the Act's take prohibitions (at section 9) certain activities that promote the maintenance or restoration of habitat conditions required by the Mazama pocket gopher consistent with regulations necessary and advisable for the continued conservation of the four subspecies (Olympia, Roy Prairie, Tenino, and Yelm pocket gophers). Specifically, the Service is promulgating a special rule under section 4(d) of the Act to exempt take of these listed species for general activities conducted on agricultural and ranching lands, regular maintenance activities on civilian airports, control of noxious weeds and invasive plants, maintenance of roadside rights-of-way, and limited activities on

private landowner parcels. If an activity resulting in take of the Mazama pocket gopher is not exempted under this 4(d) special rule, then the general prohibitions at 50 CFR 17.31 for threatened wildlife would apply, and we would require a permit pursuant to section 10 of the Act for such an activity, as specified in our regulations. Nothing in this 4(d) special rule would affect the consultation requirements under section 7 of the Act. The intent of this special rule is to increase support for the conservation of the Mazama pocket gopher and provide an incentive for continued management activities that benefit the Olympia, Roy Prairie, Tenino, and Yelm subspecies and their habitat.

Peer review and public comment. We sought comments from independent specialists to ensure that our designation is based on scientifically sound data, assumptions, and analyses. We invited these peer reviewers to comment on our listing proposal. We obtained opinions from two knowledgeable individuals with scientific expertise regarding the Mazama pocket gopher. These peer reviewers generally concurred with our methods and conclusions and provided additional information, clarifications, and suggestions to improve this final rule. Information we received from peer review is incorporated in this document. We also considered all comments and information received from the public during our three open comment periods, which were open a total of 135 days. We held two public information workshops and a public hearing on the proposed rule in April 2013.

Previous Federal Actions

The full candidate history and previous Federal actions for the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers (hereafter referred to as “the four Thurston/Pierce subspecies of the Mazama pocket gopher”) are described in the proposed rule to list, establish a 4(d) special rule, and designate critical habitat for these four subspecies, published December 11, 2012 (77 FR 73770). In that same proposed rule, we identified five subspecies of Mazama pocket gopher in the State of Washington for removal from the candidate list: the Olympic, Shelton, and Cathlamet pocket gophers (*Thomomys mazama melanops*, *T.m. louiei*, and *T.m. couchi*, respectively) because we determined that they are not warranted for listing; the Tacoma pocket gopher (*T.m. tacomensis*) because it is extinct; and the Brush Prairie pocket gopher (*T. talpoides douglasii*) because it was added to the list due to taxonomic error. We published a notice of availability of the draft economic analysis (DEA) of the critical habitat designation and announcement of public information meetings and a public hearing on our proposed rulemaking on April 3, 2013 (78 FR 20074), and a 6-month extension of the final determination for the proposed listing and designation of critical habitat for the four Thurston/Pierce subspecies of the Mazama pocket gopher on September 3, 2013 (78 FR 54218). We extended our final determination under section 4(b)(6)(B)(i) of the Act in response to substantial scientific disagreement surrounding the accuracy or sufficiency of available data regarding the degree of threat to the Mazama pocket gopher from various agricultural and ranching activities. We worked collaboratively with the Washington State Department of Agriculture (WSDA) during this extension to address these uncertainties to the extent possible.

Details regarding the comment periods on the proposed rulemaking to list the four Thurston/Pierce subspecies, promulgate a 4(d) special rule, and designate critical habitat are provided below. On September 3, 2013, we published a notice in the **Federal Register** affirming the removal of the Olympic, Shelton, Cathlamet, Tacoma, and Brush Prairie pocket gophers from the candidate list (78 FR 54214). Critical habitat for the Olympia, Roy Prairie, Tenino, and Yelm subspecies of the Mazama pocket gopher is published separately elsewhere in today's issue of the **Federal Register**.

Summary of Comments and Recommendations

We requested written comments from the public on the proposed listing, the associated 4(d) special rule, and the designation of critical habitat for the four Thurston/Pierce subspecies of the Mazama pocket gopher during three comment periods. The first comment period, associated with the publication of the proposed rule (77 FR 73770; December 11, 2012), was open for 60 days, from December 11, 2012, through February 11, 2013. We then made available the DEA of the proposed critical habitat designation and reopened the comment period on the proposed rule for an additional 30 days, from April 3, 2013, to May 3, 2013 (78 FR 20074; April 3, 2013). We also contacted appropriate Federal, State, tribal, county, and local agencies; scientific organizations; and other interested parties and invited them to comment on the proposed rule and the DEA. We held two public information workshops and a public hearing in April 2013 on the proposed rule to list the subspecies, the associated 4(d) special rule, and the proposed critical habitat designations. On September 3, 2013, we announced a 6-

month extension of the final determination on the listing and critical habitat designation for the four Thurston/Pierce subspecies of the Mazama pocket gopher (78 FR 54218) and reopened a third comment period on the proposed rule to list, establish a 4(d) special rule, and designate critical habitat for the four Thurston/Pierce subspecies for an additional 45 days. The total time available for public comment on the proposed rulemakings for the four Thurston/Pierce subspecies of the Mazama pocket gopher was 135 days.

During the 3 public comment periods, we received close to 220 comment letters and e-mails from individuals and organizations, as well as speaker testimony at the public hearing held on April 18, 2013. These comments addressed the proposed listing and associated special rule, or the proposed critical habitat (or both) for Mazama pocket gopher. We received comment letters from two peer reviewers, one State agency, and two Federal agencies on these four subspecies of the Mazama pocket gopher. The final rule designating critical habitat for the four Thurston/Pierce subspecies of the Mazama pocket gopher is published separately elsewhere in today's volume of the **Federal Register**, and comments specific to the critical habitat are addressed in that rulemaking. Here we address only those comments relevant to the proposed listing and the associated special rule under section 4(d) of the Act.

All substantive information provided during comment periods has either been incorporated directly into this final rule or is addressed below. Comments we received are grouped into general issues specifically relating to the listing or 4(d) special rule for

the four Thurston/Pierce subspecies of the Mazama pocket gopher, and are addressed in the following summary and incorporated into the final rule as appropriate.

Comments from Peer Reviewers

In accordance with our peer review policy published on July 1, 1994 (59 FR 34270), we solicited expert opinion from six knowledgeable individuals with scientific expertise that included familiarity with the Mazama pocket gopher and its habitats, biological needs, and threats. Two peer reviewers responded, and both were supportive of the Service's evaluation of the best scientific and commercial data available in proposing to list the four Thurston/Pierce subspecies of the Mazama pocket gopher. Our requests for peer review are limited to a request for review of the merits of the scientific information in our documents; if peer reviewers have volunteered their personal opinions on matters not directly relevant to the science of our proposed listing, we do not respond to those comments here.

(1) *Comment:* Both peer reviewers provided corrections and suggestions for clarifying and improving the accuracy of the Background, Habitat and Life History, Historical and Current Range and Distribution, Summary of Factors Affecting the Species, and Conservation Measures sections of the preamble of the proposed rule.

Our Response: We appreciate these corrections and suggestions, and have made changes to this final rule to reflect the peer reviewers' input.

(2) *Comment:* One peer reviewer recommended that an education and incentives program be implemented for private landowners to help conserve the four Thurston/Pierce subspecies of the Mazama pocket gopher.

Our Response: The Service supports a variety of programs that conserve species, including Habitat Conservation Planning and Safe Harbor Agreements. The Service is working with the Natural Resources Conservation Service (NRCS), Thurston County, Washington Department of Fish and Wildlife (WDFW), and various nongovernmental entities to develop and implement education and incentive programs for the four Thurston/Pierce subspecies of the Mazama pocket gopher. We appreciate the suggestion, and will keep this in mind as we move forward with recovery planning for these species. However, such a consideration is not directly relevant to our evaluation of the status of the species.

(3) *Comment:* One peer reviewer found the section on unauthorized collecting, handling, possessing, etc., to be confusing where it referenced possession of specimens not more than 100 years old but collected prior to 2012.

Our Response: We have deleted this section because it did not accurately describe the Act's prohibitions. However, we can clarify for the reviewer that possession of specimens collected prior to listing is not prohibited.

Comments from State

Section 4(i) of the Act states, “the Secretary shall submit to the State agency a written justification for his [her] failure to adopt regulations consistent with the agency’s

comments or petition.” Comments we received from State agencies regarding the proposal to list four Thurston/Pierce subspecies of the Mazama pocket gopher subspecies as threatened under the Act are addressed below. We received comments from WDFW, Washington Department of Natural Resources (WDNR), and Washington State Department of Transportation (WSDOT) related to biological information, threats, and the 4(d) special rule.

WDFW and WDNR provided a number of recommended technical corrections or edits to the proposed listing determination for the four Thurston/Pierce subspecies of the Mazama pocket gopher. We have evaluated and incorporated this information into this final rule where appropriate to clarify the final listing determination. In instances where the Service may have disagreed with an interpretation of the technical information that was provided, we have responded in separate communication with either WDFW or WDNR.

Washington Department of Fish and Wildlife

(4) *Comment:* WDFW noted that no citation was given for the list of soils we described as being occupied by the Mazama pocket gopher in Washington.

Our Response: The list of soil types described in the proposed rule were compiled by using the WDFW Heritage Database to document where occurrence records of the Mazama pocket gopher overlapped mapped soil type. While not all USDA soil type descriptions include slope, the majority of soil types where slope was included were described as being below 15 percent.

(5) *Comment:* WDFW stated that it is important to consider that pocket gopher populations are known to fluctuate and that those fluctuations may be fairly large.

Our Response: The Service agrees that some species of pocket gophers that live multiple years and undergo multiple reproductive cycles per year are likely to exhibit fairly large fluctuations in population number, but we point out the following: all of the data we currently have indicates that Mazama pocket gophers are short lived (1–2 years), have a single reproductive event per year, and average five young. If predation and disease pressures are low and reproductive success is high, this could result in a fairly large population increase, but without the means to monitor population numbers, it is a difficult assertion to either support or disprove. Since there is only a weak correlation between the number of pocket gopher mounds and the number of resident pocket gophers (Olson 2011a, p. 37), and since there are many different scenarios under which an individual pocket gopher may increase the number of mounds it makes (optimal foraging, re-excavation, new excavation, etc.), the Service believes it is currently impossible to document fluctuations in population size. In arriving at our determination that the four Thurston/Pierce subspecies of the Mazama pocket gopher meet the definition of “threatened” under the Act, we note our conclusion is not based on estimates of population size, but on the reduction in range and numbers of populations due to past threats, and the negative impact of ongoing threats to those few populations that remain. We discuss this further in our response to Comment 15, below.

(6) *Comment:* WDFW suggested clarifications to the list of allowed activities on airports and on single-family residential properties under the proposed 4(d) special

rule. WDFW expressed the concern that any special rules pertaining to airports be carefully crafted, and that there should be a mechanism in place to monitor Mazama pocket gophers on all occupied airports as they will face increasing pressure from surrounding development over time.

Our Response: We have amended the 4(d) special rule to clarify the list of allowed activities that are covered. The Mazama pocket gopher special rule that pertains to civilian airports has been reworded based on input from a variety of commenters, including the Port of Olympia and informal comments submitted by the Federal Aviation Administration (FAA). We believe our final 4(d) special rule addresses concerns and incorporates recommendations we received on our proposal, and exempts from the prohibitions of section 9 certain ongoing activities on civilian airports and residential properties consistent with regulations necessary and advisable for the continued conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher. However, we note 4(d) rules can be revoked or amended through rulemaking at any time should the Service determine that they are no longer consistent with the conservation of the species.

While the Service did not list the Shelton pocket gopher (*Thomomys mazama couchi*; September 3, 2013, 78 FR 54214), which largely resides on the Port of Shelton's Sanderson Field (also known as Shelton Airport), it remains a State-listed species and as such, the Port of Shelton will be required to continue to conserve the species on their property. If the status of the Shelton pocket gopher changes such that Federal listing may be warranted, the Service retains discretion to propose listing this subspecies.

Washington Department of Natural Resources

(7) *Comment:* WDNR, as well as the Natural Resources Conservation Service (NRCS), suggested additions and changes to the list of allowed agricultural activities and a revision to the calendar dates that some of those activities may take place under the proposed 4(d) special rule. They suggested these changes in order to avoid possible unintended consequences of some of the proposed requirements, which they believe might compromise the goal of encouraging continued agricultural use of these areas. WDFW raised concern about the lack of restrictions on conversion from one agricultural use to another, since Mazama pocket gophers do not respond positively to all agricultural practices.

Our Response: The Service worked closely with our State and Federal partners to understand which agricultural practices and related activities could be covered under the 4(d) special rule. Not all suggested changes were incorporated because not all activities that were suggested met our criteria for what is appropriate for inclusion under a 4(d) special rule for the four Thurston/Pierce subspecies of the Mazama pocket gopher (under section 4(d) of the Act, such a special rule must be “necessary and advisable for the conservation of the species”). We have amended the rule to clarify the terms used, revised the dates that covered activities are allowed, and revised the list of agricultural activities that are covered, where appropriate. We believe our final 4(d) special rule addresses concerns and incorporates recommendations we received on our proposal and exempts from the prohibitions of section 9 certain ongoing agricultural practices consistent with regulations necessary and advisable for the continued conservation of the four subspecies of Mazama pocket gopher. With the help of our Federal and State

partners, we will continue to work with agricultural landowners as necessary to more fully cover their activities while conserving the Mazama pocket gopher using a range of available conservation tools, such as permits and other authorizations (see also our response to Comment 38).

Washington State Department of Transportation

(8) *Comment:* WSDOT asked that we consider expanding the exemptions listed under our 4(d) special rule to include vegetation management of roadside rights-of-way, including mechanical mowing, weed control, and woody vegetation control (mechanical or herbicide control measures), as well as fencing operations. They pointed out that these activities maintain suitable habitat conditions for the pocket gophers by reducing the woody vegetation that they avoid, and maintaining the low vegetation cover that they favor. The agency additionally pointed out that suitable habitat for the Mazama pocket gopher is found along highways and roadways that traverse prairie habitats throughout Thurston and Pierce Counties.

Our Response: We agree that the roadside management activities described by WSDOT benefit the Mazama pocket gopher by restoring or maintaining habitat in a condition suitable for the subspecies. As we do not wish to discourage the continuation of proactive management activities that benefit the conservation of the Mazama pocket gopher, as described in the **Special Rule** section of this document, we conclude that it is necessary and advisable for the conservation of the four Thurston/Pierce subspecies to add roadside vegetation management and fencing activities to the list of exemptions from section 9 in our 4(d) special rule. This exemption applies to all Federal, State, county,

private, or Tribal vegetation management activities on highways or roadside rights-of-way. Under the 4(d) special rule, although exemptions from the prohibitions of section 9 are provided, any activities subject to a Federal nexus and that may affect the species or its critical habitat still require consultation under section 7 of the Act.

Comments from Federal Agencies

Natural Resources Conservation Service

Comments from the NRCS have been incorporated into Comment 7, above.

Comments from the Public

(9) *Comment:* Several commenters questioned the use of the current taxonomy for the *Mazama* pocket gopher for the purposes of listing.

Our Response: The Service acknowledges that the original taxonomy of the *Mazama* pocket gopher was based on morphotype (the difference between the appearances of separate subspecies) and that the examination of genetic material would provide greater insight into the degree of relatedness between subspecies. However, under the Act we are to make a listing determination based on the best scientific and commercial data available at the time of our rulemaking; we cannot speculate as to what future research may or may not reveal. The currently accepted subspecific designations of *Thomomys mazama* (the *Mazama* pocket gopher) stand according to the accepted rules of the International Commission on Zoological Nomenclature. No compelling

information is available nor has been submitted through the appropriate scientific channels necessary to effect a revision in the established taxonomy. Some genetic work conducted on the Mazama pocket gopher created confusion regarding their taxonomy, but that work was never published in a peer-reviewed journal.

It is possible that ongoing genetic work will clarify the relationship between the subspecies in the future, and if the International Commission on Zoological Nomenclature receives and accepts a revised taxonomy for the Mazama pocket gopher that is at odds with the taxonomy used here, we can revisit the listing at that time. To date, however, there has been no publication of any data that could lead to a formal submission for a revision of the taxonomy of the Mazama pocket gopher to the International Commission on Zoological Nomenclature, nor is there any record indicating that they have received any petition to consider a revision. Therefore, consistent with the direction from the Act (i.e., based on the best scientific and commercial data available at the time of our finding), we are using the established taxonomy for the Mazama pocket gopher, which recognizes the Olympia, Roy Prairie, Tenino, and Yelm pocket gopher as separate subspecies. See the “Taxonomy” section of this document for further information.

(10) *Comment:* Several commenters believed that an ongoing collaboration between the U.S. Geological Survey (USGS) and the Service is designed to definitively determine whether or not the present subspecies distinctions upon which the proposed listing relies are in fact scientifically accurate, and believed the Service should delay its listing determination until these results are completed.

Our Response: Scientific knowledge is an ever-growing body of work to which many researchers and studies contribute. There is no one point in time at which "science" is complete, however, the Service is required to use "the best scientific and commercial data available" at the time a listing determination is made. The ongoing collaboration between USGS and the Service that was referenced by the commenters was designed to assist in the ongoing conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher, and was not intended to support a determination of whether or not listing them as threatened under the Act is warranted. The results of this study would allow the Service to establish: (a) the functional unit of management for the species (e.g., the subspecies level, the metapopulation level, or the population level); and (b) where the physical boundaries for those units exist on the landscape. This assessment will be made based on whether or not the results indicate genetic differentiation has resulted in evolutionarily divergent paths for different populations. Evidence of evolutionary divergence will dictate the future management strategies for the Mazama pocket gopher. This is not the same question as whether the evidence suggests a possible redefinition of subspecies, though that could be a logical outgrowth of the research conducted if the results support that outcome. See also our response to Comment 9, above.

(11) *Comment:* One commenter stated that the presumption of earlier expansive occupancy for the Mazama pocket gopher across undeveloped prairies is without merit.

Our Response: It is impossible to know for certain the full extent of the historical occupancy for the Mazama pocket gopher in Washington State for the entirety of the species' evolutionary history. Extrapolating from the geologic record, we can reasonably

assert that pocket gophers were more widespread and likely occupied a much wider range of habitats across a much broader area prior to the descent of the Vashon lobe of the Cordilleran ice sheet during the last glaciation period. This is demonstrable through the isolated and genetically distinct population of Mazama pocket gopher in the Olympic Mountains and other isolated populations, such as the Cathlamet pocket gopher in western Washington. Pocket gophers simply cannot disperse quickly across great distances where habitat is discontinuous, indicating that the ability of populations to extend across the state over a short period of time would have been extremely improbable. In order for prehistoric pocket gopher populations to reach the Olympic Mountains, they would have had to have had a much wider distribution across a greater variety of habitats than they currently inhabit. Mazama pocket gophers, as we know them, have evolved to require friable, well-drained soils in relatively open areas. The prairies of the south Puget Sound landscape are exactly that.

Considering the potential for evolutionary adaptation on the geologic time scale, it is completely reasonable to expect that pocket gopher populations were historically far more widespread in western Washington. That said, all species are somewhat patchily distributed based on habitat availability and each species' ability to disperse to, compete for, and exploit resources, so it is possible some historical prairies or areas of prairies may never have been occupied. We further acknowledge here and elsewhere in this document that the Mazama pocket gopher exhibits patchily distributed use of available habitat, meaning that not all suitable areas are likely to be occupied at all times. The current fragmented and discontinuous state of apparently suitable habitat, such as the remaining undeveloped prairies, has rendered it impossible for the Mazama pocket

gopher to sustain widespread occupancy, as the Service asserts was likely the case. It is reasonable to state, based on knowledge of dispersal capability, current distribution, and the distribution of similar *Thomomys* species, that the Mazama pocket gopher likely had a much broader historical distribution that included a greater portion of the prairie habitat in the south Puget Sound than they currently occupy, as did Dalquest and Scheffer (1942, p. 95; 1944a, p. 311).

(12) *Comment:* One commenter stated that the only distribution studies being conducted on the Mazama pocket gopher involved lands within the Thurston County Urban Growth Areas (UGAs), and believed Mazama pocket gophers exist in many other areas of the County.

Our Response: We draw the commenter's attention to the WDFW (2013a) Mazama Pocket Gopher Distribution and Habitat study, which used a randomized design to sample approximately 800 locations in Grays Harbor, Lewis, Mason, Pierce, and Thurston Counties on public and private lands, the vast majority of which were outside of any UGA. We also note that this study reinforced the current known distribution of the Mazama pocket gopher in western Washington by providing insight into where Mazama pocket gopher sign was detected (positive survey data) and where it was not detected (negative survey data). The strength of this effort and its results support our current understanding of the distribution of the Mazama pocket gopher in Thurston County.

(13) *Comment:* Two commenters referenced the reports from contract biologists who claim to have found Mazama pocket gopher mounds outside of the currently known range.

Our Response: The Service took these reports into consideration, but subsequent trapping conducted by WDFW at the sites in question have resulted in the capture of only moles (*Scapanus* spp.), whose mounds are often confused with those of Mazama pocket gophers. Neither Service nor WDFW biologists have been able to locate any other Mazama pocket gopher sign in the area despite broad survey efforts.

(14) *Comment:* Several commenters expressed the opinion that the distribution and population sizes currently known for the Mazama pocket gopher have been underestimated, while another commenter stated that populations are either stable or increasing. Several other commenters stated that the Mazama pocket gopher should not be given Federal protection under the Act when it appears as if they occur in great numbers.

Our Response: The extensive distribution study recently conducted by WDFW (2013a) reinforced the known distribution of the Mazama pocket gopher in Washington State and provided valuable "negative" survey data by documenting areas where Mazama pocket gophers were not detected. It is important to note that the Service did not use population size while conducting the threats analysis because there is no established way to accurately estimate and monitor population size for the Mazama pocket gopher. No data were collected that would provide information about population trends, nor would it have been possible to obtain this data in a single survey season.

Very few people actually see *Mazama* pocket gophers because they are primarily fossorial, living almost entirely underground. What most people see when they become aware of pocket gophers are mounds of dirt excavated from the tunnel systems where the pocket gophers live, and they may extrapolate from the number of mounds to the number of gophers, assuming that many mounds equates to many gophers. Research has demonstrated that the correlation between the number of mounds and the number of pocket gophers is weak (Olson 2011a, p. 37), and there are many different circumstances that can lead to an increase in the number of mounds when there are not many gophers. Such circumstances include instances of soil compaction (a response to tunnels being crushed or damaged), in cases of sparse vegetation (which forces the animals to dig farther for forage material), or when gophers disperse into a new area and have to excavate a completely new tunnel system.

Since *Mazama* pocket gophers are extremely territorial, their density is low except when young are present. Another complicating factor is that *Mazama* pocket gophers and moles can coexist at the same site, creating the impression that there are many more gophers than actually occur. There is currently no effective and accurate way to count live pocket gophers. However, the Service did determine larger-scale changes in population status such as local extirpations and range contractions, and evaluated potential future status in the threats analysis section of this rule for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher by focusing on factors such as habitat destruction and fragmentation, predation, and lack of gene flow between extant populations. Based on our evaluation of these considerations, we have concluded that

each of the four Thurston/Pierce subspecies of the Mazama pocket gopher meets the definition of a threatened species under the Act.

(15) *Comment:* One commenter questioned whether or not there was a reduction in population numbers of the Mazama pocket gopher in Washington and asserted that if a decrease in population numbers does exist, it should be attributed to past pest control efforts, of which Mazama pocket gophers were a target as recently as 1992. The same commenter stated that Mazama pocket gophers are "rodents," implied that rodents are immune to the efforts of humans to eradicate them, and provided a list of documents reporting on efforts to control or eradicate many different species of *Thomomys* and many subspecies of *T. mazama*. Most of these studies were conducted in Oregon and where gophers were considered pests at tree farms.

Our Response: Because there is currently no practical way to count individual Mazama pocket gophers within a population, the status evaluation of each subspecies was conducted using other metrics. The Service determined that the suitable habitat available has been reduced to the point that many historical populations have been permanently extirpated (such as in heavily developed areas) and gene flow between surviving populations has been restricted to the point of preventing the natural recovery of the subspecies. Past pest control efforts directed at Mazama pocket gophers may have contributed to fragmentation and decline in some populations.

While it is true that Mazama pocket gophers are rodents, it is important to note that the documented reproductive strategy of Mazama pocket gophers is unlike that of most rodents. Mazama pocket gophers only reproduce once a year and have an average

lifespan of just a year or two in the wild. Even though they generally have a litter of around five pups, they are still a prey species, so it is reasonable to expect that only one or two of their offspring will survive each year, depending on contemporaneous predation pressure. This life history is in contrast to most other rodents, many of which have flexible reproductive cycles and the ability to produce multiple large litters of offspring each year.

Even within the same species of pocket gopher, evolutionary adaptation plays a role in the ability of individual subspecies to utilize particular habitats. The majority of the subspecies of *Thomomys mazama* in Washington inhabit soils associated with prairies and glacial outwash, not forests. Douglas-fir trees (*Pseudotsuga menziesii*) will encroach into the soil types and prairies that the four Thurston/Pierce subspecies of the Mazama pocket gopher prefer, but Mazama pocket gopher habitat in Washington historically consisted of open areas. To extrapolate from the literature regarding other species of *Thomomys* and even from other subspecies of *T. mazama* that live in different habitat types could lead to erroneous conclusions about the ability of the four Thurston/Pierce subspecies of the Mazama pocket gopher to persist without protection.

(16) *Comment:* Many commenters with concerns about the listing of the Mazama pocket gopher conflated the U.S. Fish and Wildlife Service (the Service) with the Washington Department of Fish and Wildlife (WDFW), which is the State of Washington's fish and wildlife management agency.

Our Response: While the Service, as a Federal agency, works collaboratively with the State of Washington and maintains close working relationships with their expert

biologists, we cannot speak to the agreements negotiated between WDFW and other parties, except where we explicitly rely upon information in those agreements, nor are we able to account for any perceived inconsistencies in information produced by the State. It is especially important to recognize that a conservation agreement negotiated between State agencies, such as WDFW, and independent parties is not automatically extended to include the Service or accepted by the Service, regardless of the conservation benefit to the species.

(17) *Comment:* Several commenters observed that WDFW clarified their position on the necessity of a Federal listing for the Mazama pocket gopher between the first comment period and the second comment period.

Our Response: The Service received two comment letters from WDFW during the public comment periods. WDFW initially stated, “While WDFW supports the objective of ensuring appropriate conservation measures are in place for the species, federal listing and critical habitat designation is not necessary at this time due to ongoing county, state, and federal conservation efforts.”

During the second comment period, the Director of WDFW submitted a second comment letter that stated, in part “The GMA [Washington State’s Growth Management Act] provides landscape-scale planning and conservation policies and tools, while the ESA focuses on protection for species and the ecosystems upon which they depend. Each authority plays an important role in achieving our shared goals for prairie habitat and species conservation; however, in this case implementation to date of GMA alone has not provided enough certainty of future conservation for the species to fully address the

threats identified in the proposed federal ESA listing. More work is needed to identify specific protection standards at the landscape and site scale in order to achieve those goals. Policy makers and planners continue to work together to identify these standards so that we can work together jointly to help other entities prepare for these potential listings, and perhaps eliminate the need for additional listings in the future due to the presence of sufficient state-led conservation actions."

(18) *Comment:* Several commenters mistakenly used the term "endangered" instead of "threatened" to refer to the Service's proposed listing status of the four subspecies of the Mazama pocket gopher found in Pierce and Thurston Counties.

Our Response: An "endangered" species is any species that is in danger of extinction throughout all or a significant portion of its range; a "threatened" species is any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Endangered species are at the brink of extinction today, while threatened species are likely to be at the brink in the near future if their status does not improve or at least stabilize. We have made the determination that the four Thurston/Pierce subspecies of the Mazama pocket gopher found in Pierce and Thurston Counties are likely to become an endangered species in the foreseeable future, therefore each will be listed as a "threatened" species under the Act.

(19) *Comment:* Many commenters questioned the data and the science used to determine the threatened status of the four Thurston/Pierce subspecies of the Mazama pocket gopher, averring that the state of our collective knowledge about the Mazama

pocket gopher and its known threats is incomplete and that more studies are required to make a determination.

Our Response: We are required to make our determination based on the best scientific and commercial data available at the time of our rulemaking, except in cases where the Secretary finds that there is substantial disagreement regarding the sufficiency or accuracy of the available data relevant to the determination. In such a case, under section 4(b)(6)(B)(i) of the Act, the Secretary may extend the 1-year period to make a final determination by up to 6 months for the purposes of soliciting additional data. In this case, we did extend our final determination on the listing status of the four Thurston/Pierce subspecies of the Mazama pocket gopher by 6 months due to substantial disagreement regarding the sufficiency or accuracy of some of the available threats information, which is the maximum extent allowable under the statute. We considered the best scientific and commercial data available regarding the subspecies of Mazama pocket gophers and their habitats in Washington State to evaluate their potential status under the Act.

In the case of the Olympic pocket gopher (*Thomomys mazama melanops*), the Shelton pocket gopher (*T. m. couchi*), and the Cathlamet pocket gopher (*T. m. louiei*), we determined that the best available data did not support listing under the Act (September 3, 2013; 78 FR 54214). For the Olympia pocket gopher, Roy Prairie pocket gopher, Tenino pocket gopher, and Yelm pocket gopher, as detailed in the **Summary of Factors Affecting the Species** section of this document, our evaluation of the best available scientific data leads us to determine that these subspecies each meet the definition of a threatened species under the Act. We solicited peer review of our evaluation of the

available data, and our peer reviewers supported our analysis. Science is a cumulative process, and the body of knowledge is ever-growing. In light of this, the Service will always take new research into consideration. If plausible new research supports amendment or revision of this rule in the future, the Service will modify the rule consistent with the Act and our established work priorities at that time.

(20) Comment: Several commenters suggested that the Service did not take into account WDFW's ongoing research that had not been formally completed when the proposed rule was published.

Our Response: The Service was fully informed by the researchers who were conducting this work and cited data provided by those individuals directly where their current state of knowledge differed from their previously published reports. WDFW's January 2013 summary report of the extensive Mazama pocket gopher distribution and habitat survey that was conducted in 2012 reinforced the known distribution of Mazama pocket gophers in Washington State. The report stated that only one potentially new location had been identified, but subsequent investigation did not result in confirmation of pocket gopher presence at that site. The WDFW survey was a valuable contribution to our current state of knowledge about Mazama pocket gopher distribution and habitat use in that it provided both positive and negative survey data that reinforced the previously established pattern of distribution.

(21) *Comment:* One commenter requested substantiated data demonstrating a positive benefit of listing the Mazama pocket gopher, and asked whether there had been an evaluation of the economic impact of the pending action.

Our Response: In making a determination as to whether a species meets the Act's definition of an endangered or threatened species, under section 4(a)(1)(A) of the Act the Secretary is to make that determination based *solely* on the basis of the best scientific and commercial data available (emphasis added). The question of whether or not there may be some positive benefit to the listing cannot by law enter into the determination. The evaluation of economic impacts comes into play only in association with the designation of critical habitat under section 4(b)(2) of the Act, as described in detail in our final designation of critical habitat for Mazama pocket gopher, published elsewhere in the **Federal Register** today. Therefore, although we did not consider the economic impacts of the proposed listing, as such a consideration is not allowable under the Act, we did consider the potential economic impacts of the critical habitat designation, including the potential benefits of such designation.

(22) *Comment:* Numerous commenters expressed concerns that the listing of the four Thurston/Pierce subspecies of the Mazama pocket gopher would result in sweeping adverse economic impacts. Among these concerns was that much of the privately owned land and housing would be rendered worthless, and that businesses would be ruined. One commenter expressed concerns that their property would be sold to developers, or that there would be no compensation for property that would be rendered unusable. Several commenters expressed concerns that restrictions associated with the listing would hinder

economic development, and implied that the uncertainty associated with the listing could hinder the ability to pass bonds for school construction.

Our Response: We understand that there is a lot of confusion and concern about the effect of a listing and critical habitat designation for the four Thurston/Pierce subspecies of the Mazama pocket gopher. We encourage any landowners with a listed species present on their property and who thinks they carry out activities that may negatively impact that listed species to work with the Service. We can help those landowners determine whether a habitat conservation plan (HCP) or safe harbor agreement (SHA) may be appropriate for their needs. These plans or agreements provide for the conservation of the listed species while providing the landowner with a permit for incidental take of the species during the course of otherwise lawful activities. We are working with Thurston County to develop a county-wide HCP for grassland and prairie associated species, including the Mazama pocket gopher. If completed, this HCP would provide long-term regulatory assurances under the Act for people who live, work, or conduct business in Thurston County.

In addition, we have attempted to recognize the conservation contribution of non-Federal landowners through the issuance of a 4(d) special rule, which exempts individuals from the take prohibitions of the Act for certain activities, such as the construction of dog kennels or installation of fences or play equipment on their property. The 4(d) special rule additionally identifies specific agricultural practices, noxious weed and invasive plant control, and roadside maintenance activities that are consistent with regulations necessary and advisable for the continued conservation of the Mazama pocket gopher.

We also note that any restrictions or regulations already in place for the Mazama pocket gopher and its habitat and any costs associated with those restrictions or regulations under the GMA and associated critical areas ordinances were not the result of listing under the Act, but are a consequence of State laws and regulations that were already in place. We acknowledge that some economic impacts are a possible consequence of listing a species under the Act; for example, there may be costs to the landowner associated with the development of an HCP. In other cases, if the landowner does not acquire a permit for incidental take, the landowner may choose to forego certain activities on their property to avoid violating the Act, resulting in potential lost income. However, as noted in our response to Comment 21, above, the statute does not provide for the consideration of such impacts when making a listing decision. Section 4(b)(1)(A) of the Act specifies that listing determinations be made “solely on the basis of the best scientific and commercial data available.” Such costs are therefore precluded from consideration in association with a listing determination.

The Act does provide for the consideration of potential economic impacts in the course of designating critical habitat. However, the regulatory consequence of critical habitat designation is limited to actions with a Federal nexus (activities that are funded, authorized, or carried out by a Federal agency). The designation of critical habitat has no regulatory effect on private lands lacking a Federal connection. Critical habitat designation itself does not prevent development or alteration of the land, create a wildlife preserve, or require any sort of response or management from a private landowner. Therefore, the designation of critical habitat would not directly result in any specific requirements by the Federal Government on the part of private landowners. Even in the

case of a Federal nexus, such as in a case where a private landowner should require a Federal permit for an activity, the only requirement is that the Federal agency involved in permitting the activity avoids the destruction or adverse modification of critical habitat. Infrequently there are some costs to private landowners in such cases as third-party applicants.

The Service believes that restrictions alone are neither an effective nor a desirable means for achieving the conservation of listed species. We prefer to work collaboratively with private landowners, and strongly encourage individuals with listed species on their property to work with us to develop incentive-based measures such as SHAs or HCPs, which have the potential to provide conservation measures that effect positive results for the species and its habitat while providing regulatory relief for landowners. The conservation and recovery of endangered and threatened species, and the ecosystems upon which they depend, is the ultimate objective of the Act, and the Service recognizes the vital importance of voluntary, nonregulatory conservation measures that provide incentives for landowners in achieving that objective.

(23) Comment: One commenter argued that, while the Service determined road construction associated with development causes fragmentation of habitat in the south Puget Sound region, the Service previously concluded that road construction can have a positive effect on pocket gopher species, referencing a rule issued for another species of pocket gopher in Wyoming.

Our Response: The Service referenced the rule cited by the commenter, which states "We conclude the effects of roads on the Wyoming pocket gopher may be both

positive and negative. Although we remain concerned about roads, the best available information does not indicate that road construction and use pose a threat to the Wyoming pocket gopher now, or in the foreseeable future." (75 FR 19600; April 15, 2010). We draw the commenter's attention to the Wyoming counties discussed in the finding and highlight the following: The human population density of Sweetwater and Carbon Counties in 2010 when the determination was made for the Wyoming pocket gopher was 4 and 5 people per square mile, respectively. Thurston County has a population density of 334 people per square mile (47 square miles of which are water and thus uninhabitable by gophers). Clearly, there is a significant difference in the human population between these areas, which extends to a high degree of difference in the density of roads; for this reason, the Service determined that road construction may not have a large effect in the case of the Wyoming pocket gopher but could have a negative effect on the Mazama pocket gopher subspecies in Thurston County. With the population of Thurston County projected to increase by approximately 141,000 people by the year 2040 (Thurston Regional Planning Council 2012, pp. 30, 32), raising the density to greater than 550 people per square mile, the corresponding increase in infrastructure will only further disrupt and fragment the remaining remnants of habitat.

(24) *Comment:* One commenter asserted that the listing determination incorrectly assumes that development in Thurston County poses the same risk to the four Thurston/Pierce subspecies of Mazama pocket gopher as earlier development did in Pierce County for the Tacoma pocket gopher, which is now presumed extinct.

Our Response: While we do not disagree that the threat of development in Pierce County is likely unequal to the threat of development in Thurston County, the threat analyses conducted for the four Thurston/Pierce subspecies of Mazama pocket gopher took many factors into account when making the determination of threatened species status. The tremendous loss of Mazama pocket gopher habitat to development in Thurston County is indisputable. Combined with fragmentation and isolation of habitat; the subsequent loss of connectivity between populations and, therefore, gene flow, increased predation pressures associated with proximity to development, habitat degradation due to the spread of invasive plants, and successional changes in grasslands attributable to development-associated fire suppression, we made the determination that the four Thurston/Pierce subspecies of Mazama pocket gopher are indeed threatened. This determination stands despite the likely differential in development pressures of historical Pierce and present-day Thurston Counties.

(25) *Comment:* One commenter suggested that increased burrowing activity after soil disturbance and other manmade environmental modifications such as installation of underground utility services or land clearing was evidence of the Mazama pocket gopher's ability to adapt to changing conditions. Several commenters observed that some environmental consultants are recommending against protection for the four Thurston/Pierce subspecies of the Mazama pocket gopher and that they are reporting observations of pocket gophers in clear cuts, on Christmas tree farms, and in areas where soils have been highly disturbed through anthropogenic processes, such as in the Artillery Impact Area (AIA) at Joint Base Lewis-McChord (JBLM).

Our Response: While it may look as if there are a lot of new mounds in areas where soil disturbance has recently occurred, this may be the activity of as few as one or two pocket gophers that are excavating new tunnel systems, attempting to reconstruct compacted or destroyed burrows, or, if much of the herbaceous vegetation has been removed from the surface of the soil, they may be expanding their tunnel system in order to increase their forage area. The presence of numerous gopher mounds does not necessarily mean that there are a lot of gophers or that the gophers present are thriving and able to persist long term (Olson 2011a, p. 37).

Due to fire suppression, much of the historical prairie landscape has been converted to timber through the succession of the plant community. If the underlying soils were formerly suitable Mazama pocket gopher habitat, removal of timber re-exposes this temporarily inaccessible habitat and any nearby population could potentially disperse into or otherwise make use of the opening. Similarly, Christmas tree farms that are situated on suitable or occupied habitat may not exclude Mazama pocket gophers, especially if the associated agricultural practices do not include heavy herbicide use or extensive mechanical soil manipulation. It is true that the AIA of JBLM appears to have been continuously occupied, at least patchily, for a very long time. The Service believes the ability of Mazama pocket gophers to use this habitat is due in part to, not in spite of, the year-round bombardment of the central impact area: ignition of dry standing vegetation attributable to bombardment leads to low-intensity burns across the 91st Division Prairie where the AIA is located. The effect of these burns, aside from mimicking the historical burning regime, is that they prevent woody encroachment and encourage a vegetative community similar to the kind the Mazama pocket gopher

evolved with; in essence, their ideal forage community. Due to the sporadic nature of artillery training, it is not unexpected that individual Mazama pocket gophers would disperse and create tunnels into the high-intensity impact area at the center of the prairie, especially if the outer edges of the prairie have a high density of Mazama pocket gophers.

(26) *Comment:* One commenter suggested that a translocation study previously conducted on Mazama pocket gophers supports the relocation of pocket gophers from urban areas to unoccupied prairies as a viable management tool to sustain the species over the long term.

Our Response: The study referenced was discussed at length in the proposed rule (77 FR 73770; December 11, 2012). It was the first of its kind and initially resulted in extremely high mortality rates for the translocated gophers. While deaths attributable to translocation declined as techniques improved, long-term monitoring will be required before it is possible to determine whether or not a “new” population has been established without continual addition of new individuals. Further it is difficult to determine whether or not a site (e.g., Mima Mounds Natural Area Preserve or Mima Prairie Glacial Heritage Preserve) provides appropriate habitat if there is no historical record of occupancy. Some of these sites superficially appear to have characteristics of suitable habitat, but are not currently documented as occupied and have no historical record of occupancy. Overall, we do not believe translocation of gophers from one area to another is a sustainable approach to conserving the species in the long term. We are collaborating with land owners, local governments, and the business community to develop a range-wide habitat

conservation strategy that may include translocation as an appropriate tool in certain circumstances.

(27) *Comment:* One commenter suggested that there is not enough information about pet predation on Mazama pocket gophers to conclude that the threat is significant and cited a comment submitted by the WDFW stating the same.

Our Response: While the Service is unaware of any pet predation studies that apply specifically to the Mazama pocket gopher, we have received numerous firsthand reports of pet predation on pocket gophers in general and Mazama pocket gophers specifically from both WDFW and Service biologists. Supplementing these observations with citizen reports received from non-biologists and incidents documented by video, we have concluded that pet predation is likely a common occurrence and we consider it a threat to the four Thurston/Pierce subspecies of Mazama pocket gopher in the south Puget Sound region. In most cases, biologists do not consider predation on individual animals as a threat to their respective populations as a whole; when considering endangered or threatened species, though, populations may be depressed to the point that the loss of individual animals becomes disproportionately important. Mazama pocket gophers are somewhat solitary in nature, and due to the known loss of occupied habitat through conversion to incompatible uses (e.g., development, mineral extraction, etc.) and the increasingly fragmented habitat that remains, we contend that loss of individual animals may have greater than normal impacts to the overall health of their populations. In WDFW's second comment letter they agreed that predation was appropriate to include as a threat, so it could be further examined and compared to the other well-documented

threats to determine actions that may be needed during the recovery process for the four Thurston/Pierce subspecies *Mazama* pocket gophers.

(28) *Comment:* Many commenters believe that Washington State's Growth Management Act (GMA) provides enough regulatory certainty to protect *Mazama* pocket gophers in Washington into the foreseeable future, therefore, precluding the need to list them as a threatened species under the Act.

Our Response: We disagree. Washington State's GMA was crafted to provide land use guidance that would result in conservation of State resources and wise land use practices. The GMA outlines 13 goals to guide the development of regulations at the county and municipality levels, but it does not mandate the establishment of performance measures or the requirement of monitoring, thus there is no standardized metric or means by which to quantify the success or failure of the resulting regulation. The Service recognizes that the GMA has produced some tangible conservation benefits, but variability in the formulation, implementation, and enforcement of the ensuing regulations has allowed for divergent planning practices across the State as well as a broad range of results at individual sites where required mitigation has taken place. Further, current implementation of the GMA fails to sufficiently curb the continued fragmentation and loss of *Mazama* pocket gopher populations and habitat. (Also see response to Comment 17). For these reasons and others, as detailed in our **Summary of Factors Affecting the Species**, we have determined that existing regulatory mechanisms, including the GMA, are inadequate to ensure the conservation of the *Mazama* pocket gopher.

(29) *Comment:* One commenter concluded that the final rule determining threatened status for the four Thurston/Pierce subspecies of Mazama pocket gopher would reverse the benefits of Washington State's GMA by reducing human population density in the Urban Growth Areas (UGAs) and increasing sprawl in rural areas.

Our Response: The Service is actively engaged with county and municipal governments (e.g., Thurston County, City of Tumwater, and Port of Olympia) to support the results of Washington's GMA and land-use planning under the Act.

(30) *Comment:* One commenter posited that the development threats and pressures that may have led to the extirpation of the Tacoma pocket gopher took place prior to the passage of Washington State's GMA and that, due to the differences between past and current regulations, conclusions about current and future threats to the Mazama pocket gopher in Washington should not be considered to be equivalent. In other words, the commenter felt the more recent State regulations are sufficient to prevent the four Thurston/Pierce subspecies from going the way of the Tacoma pocket gopher.

Our Response: We generally agree that the GMA has helped to reduce threats to the four Thurston/Pierce subspecies, although loss of Mazama pocket gopher habitat to development pressures still remains a threat. Additionally, although the GMA and associated critical areas protections have certainly provided greater protection to priority habitats and species than existed prior to their passage, it does not necessarily follow that they are sufficient to conserve the four Thurston/Pierce subspecies of the Mazama pocket gopher given the subspecies' current status and fragmented distribution. Overall the

effectiveness or timeliness of regulations to conserve a species is partially dependent upon when the actual conservation concern for the species of interest was recognized or identified as a need. Regulations implemented after significant habitat has been lost will not have the same conservation impact as those implemented when significant portions of habitat still remain intact.

(31) *Comment:* One commenter asserted that the Service dismisses the WDFW Priority Habitat and Species (PHS) program as a legal nullity for listing under the Act. Another commenter said that the WDFW PHS recommendations requires the use of standardized performance measures in the development of Habitat Management Plans (HMPs) and that the recommendation is enough of a safeguard against variability in the implementation of the HMPs to preclude the listing of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher.

Our Response: The Service does not dismiss the contribution that the PHS program provides in the form of consultation and guidance on land use issues affecting priority habitats and species. However, we note the limitations of their PHS Management Recommendations, and reflect WDFW's own characterization of the PHS: "These recommendations are not regulatory, but are based on best available science for avoiding, minimizing, and mitigating impacts to gophers and their habitat, which is primarily located in South Puget Sound. WDFW recommends the following mitigation sequence for reviewing and conditioning proposed development projects with potential impacts to *Mazama* pocket gophers" (WDFW 2011, p. 1). Because these are recommendations and

are explicitly not regulatory in nature, we do not weight them equally to existing law when evaluating the adequacy of existing regulatory mechanisms.

While the PHS allows for WDFW recommendations to become mandatory performance measures in HMPs when required and adopted by local governments, this has not occurred consistently. Performance measures must be capable of assessing the quality and efficacy of the executed plan. In order to do so, performance measures must mandate objective and measurable metrics that are used to delineate performance thresholds for success and are standardized across all plans.

Further, the PHS specifies that the recommendations for HMP development are not regulatory in nature, leaving individual planning authorities to determine implementation practices, including management and enforcement. While the PHS recommendations do specify that HMPs should be submitted to WDFW for review, the review process only occurs as WDFW resources allow, which leads to inconsistent results. Further, should WDFW staff make specific recommendations, these recommendations may or may not be implemented by the County, especially where a land use variance has been approved. The Service does not agree that these recommendations provide enough regulatory certainty to ameliorate threats to the Mazama pocket gopher to the extent that listing would not be warranted.

(32) *Comment:* Several commenters either asked how effective mitigations resulting from the current GMA critical areas regulations have been or stated that the mitigations had been successful or unsuccessful. Some commenters averred that successful mitigation should preclude the listing of the four Thurston/Pierce subspecies

of the Mazama pocket gopher while others highlighted the weaknesses in the implementation of the recommendations and regulations.

Our Response: Due to the lack of performance measures, there is no standard metric of success or failure of the GMA critical areas regulations. Furthermore, due to lack of monitoring, there is not a comprehensive list of sites where mitigation measures have been implemented and where Mazama pocket gopher populations are being tracked. Of the sites where Habitat Management Plans (HMPs) have been developed as required under the critical areas regulations and shared with the Service, many of the plans do not appear to have adequately provided for the habitat needs of the Mazama pocket gopher, in some cases overlaying water retention ponds with habitat set-asides. Due to the lack of consistency between regulations, variability in implementation of approved HMPs, the lack of requirement of performance measures or monitoring, and a lack of enforcement, the Service does not find the existing regulations to be effective at protecting and sustaining Mazama pocket gopher populations or habitat at a level consistent with the persistence of the species into the foreseeable future.

(33) *Comment:* Several commenters concluded that the Service found the existing State and local regulatory scheme adequate to protect gophers in areas outside of Thurston County, despite the fact that those jurisdictions have even lesser critical area protections.

Our Response: This statement is not correct. The Service actually concluded that although the existing State and local regulatory schemes provided some conservation measures, they are inadequate to reduce the threats within both Thurston and Pierce

Counties (See threats discussion in our proposed rule; 77 FR 73770, pp. 73782–73786).

In other counties where the Olympic, Shelton, or Cathlamet subspecies of *Mazama* pocket gophers are located, we currently have no evidence to suggest existing regulatory mechanisms are inadequate to such a degree that they pose a threat given the current status of these subspecies and their habitats.

(34) *Comment:* A comment submitted by a representative of the petroleum industry asserted that the impacts of impending climate change are not foreseeable.

Our Response: The vast majority of the body of literature contributed by adherents to the scientific method projects an increasing trend toward higher-than-average temperatures worldwide accompanied by an increased frequency in stochastic weather events, many of which present real and foreseeable threats. The Service does not consider climate change as a threat for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher because the threat is not imminent given the organism's fossorial lifestyle and propensity to use exceedingly well-drained soils, which may provide a buffer from the most predictable aspects of a changing climate. This should not be misconstrued as an indicator that the Service believes that climate change is not a threat in the long term.

(35) *Comment:* One commenter stated that, despite following State recommendations for infrastructure development that complies with the Clean Water Act while simultaneously accommodating projected population growth in Thurston County, the listing determination and designation of critical habitat for the four Thurston/Pierce

subspecies of the Mazama pocket gopher communicates to the public that participation in such processes is a useless exercise.

Our Response: The Service encourages all parties involved in the development of infrastructure to comply with all Federal and State recommendations and laws. We additionally wish to draw attention to the annually updated list of species that are candidates for listing under the Act, which has included the Mazama pocket gopher since 2001. The Service works closely with Federal, State, county, and municipal planners to publicize the status of these candidate species so that the public, and specifically developers, will be able to make informed decisions when planning for future development at all scales.

(36) *Comment:* Several commenters suggested that, faced with the prospect of Federal regulations attributable to the listing of the Mazama pocket gopher, land owners will be more inclined to maintain their land in a way that would discourage pocket gopher presence on their property.

Our Response: Although some landowners may choose to maintain their land in such a way, we do not anticipate this to universally be the case. Many Thurston and Pierce County landowners have communicated a desire to manage their lands in such a way that enhances prairie habitat. The Service recognizes these landowners and encourages positive stewardship that preserves biodiversity and local ecosystems. In this final rule, we have expanded the protections provided to residential and agricultural landowners under the 4(d) special rule for activities that support the maintenance of the open, early-seral conditions the Mazama pocket gopher prefers. We also encourage

property owners who believe they have Mazama pocket gophers on their property to investigate the potential for a conservation agreement with the Service, some of which allow increased flexibility in land use in exchange for the maintenance of suitable habitat. For more information, please visit: <http://fws.gov/endangered/> and see the "For Landowners" tab.

(37) *Comment:* One commenter urged the Service to take into consideration lands that have been recently protected as conservation areas before publishing a final rule.

Our Response: We have carefully considered the contribution of all protected lands to the conservation and recovery of the four Thurston/Pierce subspecies of the Mazama pocket gopher before making a final listing decision for each subspecies. We concluded there are currently an insufficient number and distribution of permanently protected areas for the four Thurston/Pierce subspecies of the Mazama pocket gopher to preclude the need to list them under the Act.

(38) *Comment:* Several commenters wanting the Service to make the proposed 4(d) special rule more inclusive provided anecdotal accounts of Mazama pocket gophers persisting in landscapes where certain agricultural practices have been taking place for many years (e.g., ranching, raising of nursery trees, row cropping, etc.), but failed to provide the Service with any means by which to verify their statements.

Our Response: The Service is aware of some sites where Mazama pocket gophers appear to persist concordantly with certain agricultural practices. We have limited information on how different kinds of agricultural practices affect individual Mazama

pocket gophers or their populations. Some practices such as subsoil or moldboard ploughing may conceivably have a greater impact on Mazama pocket gophers in the path of the plough than would most grazing and ranching practices. Similarly, shallow tillage may have a very different effect on animals present than deep tillage. Without being able to examine the short- and long-term effects of these practices, it is difficult to know if they are detrimental to Mazama pocket gopher populations where tilling and Mazama pocket gophers may co-occur.

During the 6-month extension for making our final determination, the Service worked collaboratively with the Washington State Department of Agriculture (WSDA) to address uncertainties surrounding the accuracy or sufficiency of the data we used to assess the threat of various agricultural and ranching activities to the Mazama pocket gopher. As part of this effort, WSDA conducted an assessment with cooperating agricultural landowners to evaluate the co-occurrence of the Mazama pocket gopher with certain representative agricultural practices.

The results of the assessment suggest that the Mazama pocket gopher is able to persist in at least some areas where these practices occur. While some of the practices recorded in the assessment may kill individual pocket gophers or negatively impact specific pocket gopher populations, we have expanded the list of permitted activities under our 4(d) special rule to include a broader range of agricultural practices, or address the specific timing of certain practices. We note that some agricultural practices are likely detrimental to the Mazama pocket gopher, but may be perceived as relatively harmless due to the continued presence of gophers on agricultural sites. Among all agricultural activities, deep tillage appears to have the highest likelihood of inadvertently

killing the greatest number of individual gophers. The potential scope of impact this activity may cause is limited by virtue of its application to only a subset of agricultural lands and its intermittent use (recommended at a frequency of no more than once every 10 years, by NRCS). Continued presence of gophers on any tilled site may be the result of reoccupancy by remnant individuals from undisturbed field edges, and are not necessarily representative of established and enduring populations within these sites.

The value of maintaining actively working agricultural lands as open and undeveloped areas provides a substantial conservation benefit to the four Thurston/Pierce subspecies of the Mazama pocket gopher. Furthermore, we now have some additional information available to us regarding the compatibility of certain practices with Mazama pocket gopher conservation, as the result of the 6-month extension on this final listing rule and an assessment conducted during that time by WSDA. As a result, we have exempted some additional agricultural practices under the 4(d) special rule (See **Special Rule**, below.)

(39) *Comment:* Many commenters provided suggestions for revising the 4(d) special rule.

Our Response: The 4(d) special rule is a provision of the Act that allows for some “take” of a protected species when the overall outcome of the allowed actions are “necessary and advisable to provide for the conservation of the species.” The special rule is not intended to cover activities that do not provide some clear conservation benefit to the species. Many parties requested coverage for their actions under the 4(d) special rule without identifying the conservation benefit those actions would provide for the Mazama

pocket gopher. The Service carefully considered all requests and amended the rule where appropriate, but was unable to cover many of the proposed actions. See the section entitled “Special Rule” for details on the revised 4(d) special rule.

Summary of Changes from the Proposed Rule

In making our final determination, we fully considered comments from the public and the peer reviewers on our proposed rule to list the four Thurston/Pierce subspecies of the *Mazama* pocket gopher as threatened species, and to promulgate a 4(d) special rule for the conservation of these subspecies. This final rule incorporates changes to our proposed listing and 4(d) special rule based on the comments and new information that we received, as summarized above. Changes from the proposed rule that we have incorporated here are as follows:

- We have expanded our discussion of occupied habitat and peripheral (or “stepping stone”) populations in the Habitat and Life History section of this document, as well as our discussion of minimum habitat patch size.
- We received additional distribution data for the *Mazama* pocket gopher in western Washington, which we have incorporated here. However, this information did not alter the conclusion of our analysis.
- We included a more thorough discussion of the use of soil types and soil type complexes by the four Thurston/Pierce subspecies of the *Mazama* pocket gopher, which can also be found under the Habitat and Life History section.

- We made some technical corrections and reevaluated the threats to all four subspecies of the Thurston/Pierce subspecies of the Mazama pocket gopher based on comments received from our State partners, as well as other comments received. Although our analysis of these potential threats is different from that in our proposed rule, none of the information changed our determination that listing each of the four subspecies of the Mazama pocket gopher as threatened species is warranted.
- We have revised the 4(d) special rule based on Federal and State agency comments and public comments. The 4(d) special rule included in our final determination has been broadened from the proposed special rule and has increased the scope of activities and allowable timing of those activities occurring on airport and agricultural and ranching lands; increased the scope of activities occurring on single-family residential properties; more broadly allowed the control of invasive plants and noxious weeds; and included the addition of routine vegetation management activities and fencing along roadside rights-of-way. We have found that such measures are necessary and advisable for the conservation of the species, and, as such, are appropriate for inclusion in our 4(d) special rule. As with all other activities covered by the 4(d) special rule, although exempted from the prohibitions of section 9 of the Act, consultation under section 7 of the Act is still required for those activities that may affect the listed species or their critical habitat in cases where there is a Federal nexus.

Background

Below, in this section of the rule, we discuss only those topics directly relevant to the listing of the Olympia, Roy Prairie, Tenino, and Yelm subspecies of the Mazama pocket gopher found in Thurston and Pierce Counties of Washington State.

Species Information

Although the species *Thomomys mazama*, or the Mazama pocket gopher, includes numerous subspecies that are found in the States of Washington, Oregon, and California (as described below in Taxonomy), only the four Thurston/Pierce subspecies of the Mazama pocket gopher are the subject of this rulemaking. In this document, when we use the general term “Mazama pocket gopher,” we are referring collectively to only those subspecies of *Thomomys mazama* that occur in the State of Washington; as used here, “Mazama pocket gopher” is not intended to include any subspecies of *T. mazama* that occur in the States of Oregon or California.

Adult Mazama pocket gophers are reddish brown to black above, and the underparts are lead-colored with buff-colored tips. The lips, nose, and patches behind the ears are black; the wrists are white. Adults range from 7 to 9 inches (in) (189 to 220 millimeters (mm)) in total length, with tails that range from 2 to 3 in (45 to 85 mm) (Verts and Carraway 2000, p. 2). In Washington, Mazama pocket gophers are found west

of the Cascade Mountain Range in the Olympic Mountains and in the Puget Sound trough, with an additional single locality known from Wahkiakum County (Verts and Carraway 2000, p. 3). Their populations are concentrated in well-drained friable soils often associated with glacial outwash. Mazama pocket gophers reach reproductive age in the spring of the year after their birth and produce litters between spring and early summer. Litter size ranges from one to nine (Wight 1918, p. 14), with an average of five (Scheffer 1938, p. 222).

Taxonomy

The Mazama pocket gopher complex consists of 15 subspecies, 8 of which occur only in Washington, 5 of which occur only in Oregon, 1 that occurs only in California, and 1 subspecies with a distribution that spans the boundary between Oregon and California (Hall 1981, p. 467). The first pocket gophers collected in western Washington were considered to be subspecies of the northern pocket gopher (*Thomomys talpoides*) (Goldman 1939), until 1960 when the complex of pocket gophers found in western Washington was determined to be more similar to the western pocket gopher (*T. mazama*) based on characteristics of the baculum (penis bone) (Johnson and Benson 1960, p. 20). Eight western Washington subspecies of the Mazama pocket gopher (*T. mazama*, ssp. *couchi*, *glacialis*, *louiei*, *melanops*, *pugetensis*, *tacomensis*, *tumuli*, and *yelmensis*) have been identified (Hall 1981, p. 467). *Thomomys mazama* is recognized as a valid species by the Integrated Taxonomic Information System (ITIS), as are each of the subspecies (ITIS 2014).

Although there have been some suggestions that potential changes to the classification of some of these subspecies may be considered, as discussed below, we have no information to suggest that any of the presently recognized subspecies are the subject of serious dispute. We consulted with Alfred Gardner, Curator of North American mammals, Smithsonian Institution, National Museum of Natural History, who identified the Mammalian Species Account 641 of the American Society of Mammalogists, authored by Verts and Carraway (2000), as the definitive text for this taxon (Gardner 2012, pers. comm.). Thus we follow the subspecies designations of Verts and Carraway (2000) in this finding, as this text represents the currently accepted taxonomy for the species *Thomomys mazama*.

While past descriptions of Mazama pocket gophers have focused on morphological differences in characteristics such as pelage color, skull features, and body size (Bailey 1915; Taylor 1919; Goldman 1939; Dalquest and Scheffer 1942; Dalquest and Scheffer 1944a, b; Gardner 1950; Hall 1981, pp. 465-466), recent genetic evaluations have been conducted on the Mazama pocket gopher complex using mitochondrial deoxyribonucleic acid (mtDNA) sequencing of the cytochrome b gene (Welch 2008). From these and subsequent data, Welch and Kenagy (2008, pp. 6–7) determined that the Mazama pocket gopher complex in Washington is geographically structured into three haplotype clades (genetic groups) representing the following three localities: (1) Olympic Peninsula (Clade A, which includes the Olympic pocket gopher); (2) Mason County (Clade B, which includes the Shelton pocket gopher), and (3) Thurston and

Pierce Counties (Clade C, which includes the Roy Prairie, Olympia, and Yelm pocket gophers).

Specimens from the subspecies *Thomomys mazama louiei* (Wahkiakum County) were unobtainable and as such were omitted from Welch and Kenagy's (2008, pp. 1–3) analysis, so what clade the Cathlamet pocket gopher belongs to or if it occupies its own clade is unknown. In addition, no specimens from either the subspecies *T. m. tumuli* (the Tenino pocket gopher) or the presumed extinct subspecies *T. m. tacomensis* (the Tacoma pocket gopher) were readily available and were also not included in the analysis. None of the haplotypes in the analyzed specimens were shared between the three clades, which supports the differentiation of the clades. The mtDNA analysis was not able to distinguish between subspecies in Clade C; more genetic work needs to be done to determine how closely related these subspecies are. Verts and Carraway (2000, p. 1) and the ITIS (2014) recognize *T. m. pugetensis*, *glacialis*, *tumuli*, and *yelmensis* (the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers, respectively) as separate subspecies based on differences in morphological characteristics (for example, pelage coloration; skull shape, size, and weight; shape and form of zygomatic arch; jugal bone; foot and tail length) and distribution. For the reasons described above, we accept this classification of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers as separate subspecies of the *Mazama* pocket gopher.

Habitat and Life History

The four Thurston/Pierce subspecies of the *Mazama* pocket gopher are associated with glacial outwash prairies in western Washington, an ecosystem of conservation concern (Hartway and Steinberg 1997, p. 1) Steinberg and Heller (1997, p. 46) found that *Mazama* pocket gophers are even more restricted in distribution than are prairies, as there are some remnant high-quality prairies seemingly within the species' range that lack pocket gophers (e.g., Mima Mounds Natural Area Preserve (NAP), and 13th Division Prairie on JBLM). Pocket gopher distribution is affected by the rock content of soils (gophers avoid the rockiest soils), drainage, forage availability, and climate (Case and Jasch 1994, p. B-21; Steinberg and Heller 1997, p. 45; Hafner *et al.* 1998, p. 279; Reichman 2007, pp. 273–274; WDFW 2009; also see Stinson 2005, p. 31), thus further restricting the total area of a prairie that may be occupied by gophers. Prairie and meadow habitats used by pocket gophers have a naturally patchy distribution. In their prairie habitats, there is an even patchier distribution of soil rockiness, which may further restrict the total area that pocket gophers can utilize (Steinberg and Heller 1997, p. 45; WDFW 2009). We assume that meadow soils have a similarly patchy distribution of rockiness, though the soil surveys to support this are, at this time, incomplete.

In Washington, *Mazama* pocket gophers currently occupy the following soil series and soil series complexes: Alderwood, Cagey, Carstairs, Everett, Everett-Spanaway complex, Everett-Spanaway-Spana complex, Godfrey, Grove, Indianola, Kapowsin, McKenna, Murnen, Nisqually, Norma, Shelton, Spana, Spana-Spanaway-Nisqually complex, Spanaway, Spanaway-Nisqually complex, and Yelm. No soil survey information is currently available for the Olympic National Park, so soils series occupied

by gophers there are unknown. These soil series and soil series complex names were derived from a GIS overlay of gopher locations with USDA NRCS GIS soil survey data layer (accessed June 20, 2008 for Thurston County; received from JBLM May 30, 2013 for Pierce County). These soil type names are very broad-scale soil series names, and don't include the more specific soil characteristics that come with a full soil map unit name, such as "Spanaway gravelly sandy loam, 0 to 3 percent slopes."

We are purposely not using specific map unit names because we know that there are imperfections in soil mapping. Mapped soil survey information may be imperfect for a variety of reasons. First, maps are based on the technology, standards, and tools that were available at the time soil surveys were conducted, sometimes up to 50 years ago. We recognize that soil survey boundaries may be adjusted in the future, and that soil series names may be added or removed on the NRCS's soil survey maps database. As a result, the overlap of gopher locations with soil series names may be different in the future. The soils information presented here is based on best scientific data available at the time of listing.

We also recognize that some of these soil series or soil series complexes are not typically either deep or well-drained. For a variety of reasons, a specific mapped soil type may or may not have all of the characteristics of that soil type as described by NRCS, and the actual soil that occurs on the ground may have characteristics that make it inhabitable by Mazama pocket gophers. These reasons may include map boundary or transcription errors, map projection errors or differences, map identification or typing

errors, soil or hydrological manipulations that have occurred since mapping took place, small-scale inclusions in the mapped soil type that are different from the mapped soil and which may be used by Mazama pocket gophers, etc. Nevertheless, based on best available data, these are the areas where Mazama pocket gopher locations and mapped soils have been found to overlap when mapped in GIS. All of these soils could potentially be suitable for any of the four Thurston/Pierce subspecies of the Mazama pocket gopher. In addition, the four Thurston/Pierce subspecies of the Mazama pocket gopher may be able to forage or burrow in soil series not on the above list. For these reasons, our list of soils may be incomplete or appear to be overly inclusive. Although some soils are sandier, more gravelly, or may have more or less silt than described, most all soils used by Mazama pocket gophers are friable (easily pulverized or crumbled), loamy, and deep, and generally have slopes less than 15 percent.

In 2011, there were reports of Mazama pocket gophers (subspecies unknown) occurring on new types of soils and on managed forest lands in Capitol State Forest (owned by Washington Department of Natural Resources (WDNR)) and Vail Forest (owned by Weyerhaeuser) in Thurston County. These were subsequently determined not to be Mazama pocket gophers but instead moles (*Scapanus* spp.), based on followup surveying and/or trapping conducted in these areas by Washington Department of Fish and Wildlife (WDFW) during the 2012 gopher survey season (Thompson 2012b, pers. comm.). Please see the discussion in Historical and Current Range and Distribution for more information about the current state of knowledge on this matter for the Mazama pocket gopher.

Mazama pocket gophers are morphologically similar to other species of pocket gophers, all of which exploit a subterranean existence. They are stocky and tubular in shape, with short necks, powerful limbs, long claws, and tiny ears and eyes. Their short, nearly hairless tails are highly sensitive and probably assist in navigation in tunnels. Burrows consist of a series of main runways, off which lateral tunnels lead to the surface of the ground (Wight 1918, p. 7). Pocket gophers dig their burrows using their sharp teeth and claws and then push the soil out through the lateral tunnels (Wight 1918, p. 8; Case and Jasch 1994, p. B-20). Nests containing dried vegetation are generally located near the center of each pocket gopher's home tunnel system (Wight 1918, p. 10). Food caches and store piles are usually placed near the nest, and excrement is piled into blind tunnels or loop tunnels, and then covered with dirt, leaving the nest and main runways clean (Wight 1918, p. 11).

The "pockets" of pocket gophers are external, fur-lined cheek pouches on either side of the mouth that are used to transport nesting material and carry plant cuttings to storage compartments. As with all rodents and lagomorphs (rabbits and hares), their incisors grow continuously (Case and Jasch 1994, p. B-20), though the rate of growth of pocket gopher incisors is higher than most rodents, perhaps to compensate for increased wear resulting from tooth-digging. Pocket gophers also have ever-growing cheek teeth (aradicular hypsodont teeth), presumably an adaptation to compensate for the high rate of wear due to an abrasive diet. Pocket gophers don't hibernate in winter; they remain active throughout the year (Case and Jasch 1994, p. B-20). Many different vertebrates

and invertebrates take refuge in gopher burrows, especially during inclement weather, including beetles, amphibians (such as toads and frogs), lizards, snakes, ground squirrels, and smaller rodents (Blume and Aga 1979, p. 131; Case and Jasch 1994, p. B-21; also see Stinson 2005, pp. 29–30).

A variety of natural predators eat pocket gophers, including weasels, snakes, badgers, foxes, skunks, bobcats, coyotes, great horned owls, barn owls, and several hawks (Hisaw and Gloyd 1926, entire; Fichter *et al.* 1955, p. 13; Huntly and Inouye 1988, p. 792; Case and Jasch 1994, p. B-21; Stinson 2005, pp. 29–30).

In addition to natural predators, predation by feral and domestic dogs (*Canis lupus familiaris*) and cats (*Felis catus*) is an increasing problem for the four Thurston/Pierce subspecies of the Mazama pocket gopher. Many local populations of the four Thurston/Pierce subspecies of the Mazama pocket gopher are presumed to be small, based on the extent of mounding activity and the solitary and territorial nature of Mazama pocket gophers. Due to their solitary and territorial nature, many sites occupied by one of the four Thurston/Pierce subspecies of the Mazama pocket gopher may contain a small number of individuals and occur in a matrix of residential and agricultural development. With feral or uncontrolled domestic animals in the vicinity, Mazama pocket gophers are exposed to increased levels of predation in these semi-urban and rural environments. In addition, some local populations of the Mazama pocket gopher occur in areas where people recreate with their dogs, bringing these potential predators into environments that

may otherwise be relatively free of them, such as wildlife areas or expanses of prairie controlled by DOD, consequently increasing the risks to the pocket gopher.

Pocket gophers are generalist herbivores and their diet includes a wide variety of plant material, including leafy vegetation, succulent roots, shoots, and tubers. In natural settings pocket gophers play a key ecological role by aerating soils, enriching soils with nutrients, activating the seed bank, and stimulating plant growth, though they can be considered pests in agricultural systems. In prairie and meadow ecosystems, pocket gopher activity is important in maintaining species richness and diversity.

The home range of a *Mazama* pocket gopher is composed of suitable breeding and foraging habitat. Home range size varies based on factors such as soil type, climate, and density and type of vegetative cover (Cox and Hunt 1992, p. 133; Case and Jasch 1994, p. B-21; Hafner *et al.* 1998, p. 279). Little research has been conducted regarding home range size for individual *Mazama* pocket gophers. Witmer *et al.* (1996, p. 96) reported an average home range size of about 1,076 square feet (ft²) (100 square meters (m²)) for *Mazama* pocket gophers in one location in Thurston County, Washington. Gopher density varies greatly due to local climate, soil suitability, and vegetation types (Case and Jasch 1994, p. B-21; Howard and Childs 1959, pp. 329–336), and densities are likely to be higher when habitat quality is better. Therefore, this one report on the *Mazama* pocket gopher (Witmer *et al.* 1996) is unlikely to represent the average density across all soil types, vegetation types, and other unique site characteristics across the ranges of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher. Research

on other species of *Thomomys* pocket gophers in other states showed a wide range of home range sizes from approximately 80 to 14,370 ft² (7.4 to 1,335 m²). Some of these are estimates based on density of gophers trapped per acre, and some are based on measurements of individual gopher territory sizes.

In the absence of studies demonstrating the minimum possible patch size for persistence of the Mazama pocket gopher, we used 50 ac (20 ha) as the smallest area necessary for recovery of Mazama pocket gopher populations, which was the agreed upon estimate of an expert panel (Converse *et al.* 2010, pp. 14–15) assembled to assist with the construction of a prairie habitat modeling exercise. We acknowledge the uncertainty with this estimate, but there are currently no studies regarding minimum patch size available for the Mazama pocket gopher, nor are there any obvious means by which a better answer can be obtained. Thus, the best available scientific data in this case is the opinion of an informed expert panel.

Foraging primarily takes place below the surface of the soil, where pocket gophers snip off roots of plants before occasionally pulling the whole plant below ground to eat or store in caches. If above-ground foraging occurs, it's usually within a few feet of a tunnel opening and forage plants are quickly cut into small pieces, and carried in their fur-lined cheek pouches back to the nest or cache (Wight 1918, p. 12). Any water they need is obtained from their food (Wight 1918, p. 13; Gettinger 1984, pp. 749–750). The probability of Mazama pocket gopher occupancy is much higher in areas with less than 10 percent woody vegetation cover (Olson 2011a, p. 16). It is reasonable to conclude that

increasing amounts of woody vegetation will shade out the forbs, bulbs, and grasses that gophers prefer to eat, and high densities of woody plants make travel both below and above the ground difficult for gophers. Encroachment of woody vegetation is cited by WDNR as a threat to habitat occupied by the Mazama pocket gopher in Olympic National Park (the Olympic pocket gopher), causing fragmentation and reducing the possibility that individual Mazama pocket gophers will emigrate or immigrate, (thus reducing gene flow) and eventually lead to complete exclusion (Fleckenstein 2013, p. 3). Mazama pocket gophers are not known to occupy areas where woody vegetation is dense and no suitable forage is available (Marsh and Steel 1992, p. 210), which includes areas invaded by the native Douglas fir tree and the invasive shrub, Scot's broom (*Cytisus scoparius*). The Service considers encroachment by woody vegetation to have the potential to have substantial negative impacts on occupied Mazama pocket gopher habitat and thus their populations.

Pocket gophers have been documented to reach sexual maturity during the spring of the year following their birth, and generally produce one litter per year (Case and Jasch 1994, p. B-20), though timing of sexual maturity has been shown to vary with habitat quality (Patton and Brylski 1987, p. 502; Patton and Smith 1990, p. 76). Gestation lasts approximately 18 days (Schramm 1961, p. 169; Anderson 1978, p. 421). Young are born in the spring to early summer (Wight 1918, p. 13), and are reared by the female. Aside from the breeding season, males and females remain segregated in their own tunnel systems. There are 1–9 pups per litter (averaging 5), born without hair, pockets, or teeth, and they must be kept warm by the mother or "packed" in dried vegetation (Wight 1918,

p. 14; Scheffer 1938, p. 222; Case and Jasch 1994, p. B-20). Juvenile pelage starts growing in at just over a week (Anderson 1978, p. 420). The young eat vegetation in the nest within 3 weeks of birth, with eyes and ears opening and pockets developing at about a month (Wight 1918, p. 14; Anderson 1978, p. 420). At 6 weeks they are weaned, fighting with siblings, and nearly ready to disperse (Wight 1918, p. 15; Anderson 1978, p. 420), which usually occurs at about 2 months of age (Stinson 2005, p. 26). They attain their adult weight around 4–5 months of age (Anderson 1978, pp. 419, 421). Most pocket gophers live only a year or two, with few living to 3 or 4 years of age (Hansen 1962, pp. 152–153; Livezey and Verts 1979, p. 39).

Pocket gophers rarely surface completely from their burrow except as juveniles, when they disperse above ground from spring through early fall (Ingles 1952, p. 89; Howard and Childs 1959, p. 312). They are highly asocial and intolerant of other gophers. Each gopher maintains its own burrow system, and occupancy of a burrow system by multiple individuals occurs only for brief periods during mating seasons and prior to weaning young (Ingles 1952, pp. 88–89; Witmer and Engeman 2007, p. 288; Marsh and Steele 1992, p. 209). The mating system is probably polygynous (a single male mates with multiple females) and most likely based on female choice. The adult sex ratio has been reported as biased toward females in most species of pocket gophers that have been studied, often as much as 4:1 (Howard and Childs 1959, p. 296; Patton and Feder 1981, p. 917), though Witmer *et al.* (1996, p. 95) reported a sex ratio of close to 1:1 in *Mazama* pocket gophers.

Sex ratio may vary with population density, which is often a measure of forage density and soil suitability for burrowing (Patton and Smith 1990, p. 6). One researcher concluded that a site having a deep soil layer that was much less rocky had a pocket gopher population density five times that of another site having rocky soil (Steinberg 1996, p. 26). A study of the relationship between soil rockiness and pocket gopher distribution revealed a strong negative correlation between the proportion of medium-sized rocks in the soil and presence of pocket gophers in eight of nine prairies sampled (medium sized rocks were considered greater than 0.5 in (12.7 mm) but less than 2 in (50.8 mm) in diameter; Steinberg 1996, p. 32). In observations of pocket gopher distribution on JBLM, pocket gophers did not occur in areas with a high percentage of Scot's broom cover in the vegetation, or where mole populations were particularly dense (Steinberg 1995, p. 26). A more recent and methodical study conducted throughout Thurston and Pierce Counties also found that pocket gopher presence was negatively associated with Scot's broom; however, the researcher found no relationship between pocket gopher presence and mole density (Olson 2011a, pp. 12–13).

Pocket gophers have low vagility, meaning they have a poor dispersal capability (Williams and Baker 1976, p. 303). *Thomomys mazama* pocket gophers are smaller in size than other sympatric (occurring within the same geographic area; overlapping in distribution) or peripatric (immediately adjacent to each other but not significantly overlapping in distribution) *Thomomys* species (Verts and Carraway 2000, p. 1). Both dispersal distances and home range size are therefore likely to be smaller than for other *Thomomys* species. Dispersal distances may vary based on surface or soil conditions and

size of the animal. For other, larger, *Thomomys* species, dispersal distances average about 131 ft (40 m) (Barnes 1973, pp. 168–169; Williams and Baker 1976, p. 306; Daly and Patton 1990, pp. 1286, 1288). Initial results from dispersal research being conducted on JBLM indicate that juvenile *Mazama* pocket gophers in Washington usually make movements from 13.1–32.8 ft (4–10 m), though these may not be dispersal movements. One juvenile made a distinct dispersal movement of 525 ft (160 m) in 1 day (Olson 2012b, p. 5). Suitable dispersal habitat is free of barriers to gopher movement, and may need to contain foraging habitat if an animal is required to make a long-distance dispersal move. Potential barriers include, but are not limited to, forest edges, roads (paved and unpaved), abrupt elevation changes, Scot's broom thickets, (Olson 2012b, p. 3), highly cultivated lawns, inhospitable soil types (Olson 2008, p. 4) or substrates, development and buildings, slopes greater than 35 percent, and open water. Barriers may be permeable, meaning that they may impede movement from place to place without completely blocking it, or they may be impermeable, meaning they cannot be crossed. Permeable barriers, as well as lower quality dispersal habitats, may present an intensified risk of mortality to animals that use them (e.g., open areas where predation risk is increased during passage or a paved area where vehicular mortality is high).

Historical and Current Range and Distribution

The following general description of the distribution of the Olympia, Roy Prairie, Tenino, and Yelm subspecies of the *Mazama* pocket gopher is based on our current knowledge. Steinberg (1996, p. 9) surveyed all historical and many currently known

gopher sites. This included all current and formerly known occupied sites listed by the WDNR as having Carstairs, Nisqually, or Spanaway gravelly or sandy loam soil, and that WDNR determined to have vegetation that was intact prairie or restorable to prairie. WDFW and a suite of consultants have surveyed areas of potential gopher habitat in both counties, usually associated with proposed development (WDFW 2012). WDFW has also surveyed areas in relation to various research studies, as well as conducting distribution surveys across five counties in 2012 (Thompson 2012a and b, entire).

Based on current and historical survey information, in Pierce County, Roy Prairie pocket gophers occur generally south and east of I-5, south of Highway 512, and west of State Highway 7. There are prairie-type areas within this described area that have been surveyed multiple times with no detections of pocket gophers, so this description is likely to be an overestimate of the subspecies' range, and likely includes areas surveyed within the historical range of the Tacoma pocket gopher, which is presumed extinct. We acknowledge that few surveys have been conducted off JBLM lands in this area, and our specific knowledge of the range of this subspecies could change in the future.

In Thurston County, the Olympia, Tenino, and Yelm pocket gophers are known to occur east of Black River and south of Interstate 5 and State Highway 101. There are no historical records of *Mazama* pocket gophers occurring outside of these areas within Thurston County. Soil series and soil series complexes that are known to support pocket gophers do occur outside of these areas. Multiple surveys conducted west of the Black River have consistently yielded negative results (WDFW 2013a). For that reason, there

is some confidence that the Black River is a range-restrictive landscape feature. Fewer surveys have been conducted north of Interstate 5 and State Highway 101 (WDFW 2013a), but those also yielded negative results. It is possible that the Mazama pocket gopher may occur north of these highways in Thurston County, but we presently have no gopher occurrence data to support that potential.

The present outermost boundaries of the ranges of each of the four Thurston/Pierce subspecies of the Mazama pocket gopher are likely approximately the same as they were historically. However, entire prairie areas or portions thereof within those outer perimeters have been lost to development and woody plant encroachment (see **Summary of Factors Affecting the Species**). Therefore, at present Mazama pocket gophers likely occupy fewer total acres than they did historically, and also occupy fewer total areas (that is, there are fewer populations within the area of their diminished range). These four subspecies are known to still occur in their type locality locations (described below), and the areas immediately around those locations are considered to still be part of each subspecies' range. Beyond these areas, uncertainty remains as to the entire areal extent of each subspecies' range, and where or if populations of subspecies coexist or abut one another; each subspecies' range is presumed to extend beyond their type localities. For this reason, the list of soils given for each subspecies below is shorter than the list given in our final designation of critical habitat for Mazama pocket gopher, published elsewhere in the **Federal Register** today.

The type locality for the Olympia pocket gopher (*Thomomys mazama pugetensis*) was the prairie on and around the Olympia Airport, known as Bush Prairie (Dalquest and Scheffer 1944b, p. 445). Gophers continue to occupy this area. Soil series and soil series complexes in and around this area that may support Mazama pocket gophers include Alderwood, Cagey, Everett, Indianola, McKenna, Nisqually, Norma, Spana, Spanaway-Nisqually complex, and Yelm.

The Roy Prairie pocket gopher (*Thomomys mazama glacialis*) is found in the vicinity of the Roy Prairie and on JBLM in Pierce County. The subspecies was described as plentiful in 1983 but by 1993 the extent of activity at the type locality was described as a “small population” (Steinberg 1996, p. 24). Due to proximity to the subspecies’ type locality, it is likely that gophers occurring on 91st Division Prairie and Marion Prairie in Pierce County contain this subspecies. Soil series and soil series complexes in and around this area that may support Mazama pocket gophers include Alderwood, Everett, Everett-Spanaway complex, Everett-Spanaway-Spana complex, Nisqually, Spana-Spanaway-Nisqually complex, and Spanaway.

Tenino pocket gophers (*Thomomys mazama tumuli*) were originally found in the vicinity of the Rocky Prairie NAP, near Tenino (Dalquest and Scheffer 1942, p. 96), a relatively small-extent prairie area. Gophers still reside there, but WDFW researchers have not seen consistent occupancy of the area by gophers in recent years (Olson 2010, *in litt.*), suggesting that the activity intermittently detected in the NAP may be attributable to individuals dispersing in from a currently unidentified nearby source. Soil series and soil

series complexes in this area that may support Mazama pocket gophers include Everett, Nisqually, Norma, Spanaway, and Spanaway-Nisqually complex.

Yelm pocket gophers (*Thomomys mazama yelmensis*) were originally found on prairies in the area of Grand Mound, Vail, and Rochester (Dalquest and Scheffer 1944b, p. 446). Surveys conducted in 1993–1994 found no gophers near the towns of Vail or Rochester (Steinberg 1995, p. 28). More recent surveys have reported gophers near Grand Mound, Littlerock, Rainier, Rochester, and Vail (Krippner 2011, p. 31), though WDFW biologists question the validity of the reports near Littlerock and Vail (WDFW 2013b, enclosure 1, p. 3). Soil series and soil series complexes in and around these areas that may support Mazama pocket gophers include Alderwood, Everett, Godfrey, Kapowsin, McKenna, Nisqually, Norma, Spana, Spanaway, Spanaway-Nisqually complex, and Yelm.

Population Estimates/Status

There are few data on historical or current population sizes of Mazama pocket gopher populations in Washington, although several local populations and one subspecies are believed to be extinct. Knowledge of the past status of the Mazama pocket gopher is limited to distributional information. Recent surveys have focused on determining current distribution, primarily in response to development applications. In addition, in 2012, WDFW initiated a 5-county-wide distribution survey. Because the object of all of these surveys has mainly been to determine presence/absence only, total population

numbers for each subspecies are unknown. As discussed under **Current and Historical Range and Distribution**, the precise boundaries of each subspecies' range are not currently known. Local population estimates have been reported but are based on using apparent gopher mounds to delineate the number of territories, a method that has not been validated (Stinson 2005, pp. 40–41). Olson (2011a, p. 2) evaluated this methodology on pocket gopher populations at the Olympia Airport and Wolf Haven International. Although there was a positive relationship between the number of mounds and number of pocket gophers, the relationship varies spatially, temporally, and demographically (Olson 2011a, pp. 2, 39). Based on the results of Olson's 2011 study we believe past population estimates (Stinson 2005) may have been too high. As there is no generally accepted standard survey protocol to determine population size for pocket gophers, it is not currently possible to obtain an estimate of subspecies population sizes or trends. Overall habitat availability has declined, however, and habitat has a finite ability to support pocket gophers, though the number of gophers any one patch can support may vary due to a variety of factors related to habitat quality and population dynamics. For these reasons, the Service concludes the overall population trend of each of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher is negative.

Increased survey effort since 2007 resulted in the identification of numerous additional occupied sites located on private lands, especially in Thurston County (WDFW 2013a). Some of these new detections are adjacent to other known occupied sites, such as the population at the Olympia Airport. The full extent of these smaller discontinuous sites is currently unknown, and no research has been done to determine whether or not

these aggregations are “stepping stone” sites that may facilitate dispersal into nearby unoccupied suitable habitat or if they are population sinks (sites that do not add to the overall population through recruitment). Others of these additional occupied sites are separate locations, seemingly unassociated (physically) with known populations (Tirhi 2008, *in litt.*). The largest known expanse of areas occupied by any subspecies of the *Mazama* pocket gopher in Washington occur on JBLM (Roy Prairie and Yelm pocket gophers), and at the Olympia and Shelton airports (Olympia and Shelton pocket gophers, respectively).

A translocated population of *Mazama* pocket gophers occurs on Wolf Haven International’s land near Tenino, Washington. Between 2005 and 2008, over 200 gophers from a variety of areas in Thurston County (some from around Olympia Airport (Olympia pocket gopher, *Thomomys mazama pugetensis*)) and some from near the intersection of Rich Road and Yelm Highway (assumed to be Olympia pocket gophers) were released into the 38-ac (15-ha) mounded prairie site. Based on the best available information, we do not believe the property contained *Mazama* pocket gophers previously. Today pocket gophers continue to occupy the site (Tirhi 2011, *in litt.*); however, current population estimates are not available. Another site, West Rocky Prairie Wildlife Area, has received a total number of 560 translocated pocket gophers (*T. m. pugetensis*) from the Olympia Airport between 2009 and 2011. Initial translocation efforts in 2009 were only marginally successful; a majority of the pocket gophers died within 3 days due to predation (Olson 2009, unnumbered p. 3). Modified release techniques used in 2010 and 2011 resulted in improved survival rates of gophers

translocated to West Rocky Prairie Wildlife Area (Olson 2011c, unnumbered p. 4). It is too soon to know if the population will become self-sustaining in the absence of additional translocations. Here we note that this experimental population was inadvertently placed within what appears to have been the historical range of the Tenino pocket gopher (*T. m. tumuli*).

Summary of Factors Affecting the Species

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal List of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on any of the following five factors: (A) the present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; and (E) other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination. Each of these factors is discussed below.

In making this finding, information pertaining to each of the subspecies in question in relation to the five factors provided in section 4(a)(1) of the Act is discussed below. In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to

the factor in a way that causes actual negative impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species warrants listing as an endangered or threatened species as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of an endangered species or threatened species under the Act.

We considered and evaluated the best available scientific and commercial information in evaluating the factors affecting each of the Mazama pocket gopher subspecies under consideration in this rule.

Factor A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

Under this factor, the primary long-term threats to the Mazama pocket gopher are the loss, degradation, and conversion of habitat, particularly to urban development, successional changes to grassland habitat, and the spread of invasive plants. The threats

also include increased predation pressure, which is closely linked to habitat degradation and discussed more fully under **Factor C**.

The prairies of south Puget Sound are part of one of the rarest ecosystems in the United States (Noss *et al.* 1995, p. I-2; Dunn and Ewing 1997, p. v). Dramatic changes have occurred on the landscape over the last 150 years, including a 90 to 95 percent reduction in the prairie ecosystem. In the south Puget Sound region, where most of western Washington's prairies historically occurred, less than 10 percent of the original prairie persists, and only 3 percent remains dominated by native vegetation (Crawford and Hall 1997, pp. 13–14).

Development

Native prairies and grasslands have been severely reduced throughout the range of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher as a result of human activity due to conversion of habitat to residential and commercial development and agriculture. Prairie habitat continues to be lost, particularly to residential development (Stinson 2005, p. 70), by removal and fragmentation of native vegetation and the excavation, grading, and/or heavy equipment-caused compaction of surfaces and conversion to non-habitat (buildings, pavement, other infrastructure), rendering soils unsuitable for burrowing. Residential development is associated with increased infrastructure such as new road construction, which is one of the primary causes of landscape fragmentation (Watts *et al.* 2007, p. 736). Activities that accompany low-

density development are correlated with decreased levels of biodiversity, mortality to wildlife, and facilitated introduction of invasive species (Trombulak and Frissell 2000, entire; Watts *et al.* 2007, p. 736). In the south Puget Sound lowlands, the glacial outwash soils and gravels underlying the prairies used by *Mazama* pocket gophers are deep and valuable for use in construction and road building, which also leads to their degradation and destruction.

In the south Puget Sound, Nisqually loamy soils appear to support high densities of *Mazama* pocket gophers (Stinson 2010a, *in litt.*; Olson 2008, p. 6), the vast majority of which occur in developed areas of Thurston County, or within the Urban Growth Areas (UGAs) for the cities of Olympia, Tumwater, and Lacey (Thurston County 2004; WDFW 2009), where future development is most likely to occur. Where pocket gopher populations presumably historically extended across an undeveloped expanse of open prairie (Dalquest and Scheffer 1942, pp. 95–96), areas currently occupied by the four Thurston/Pierce subspecies of the *Mazama* pocket gopher are now isolated to small fragmented patches due to development and conversion of suitable habitat to incompatible uses.

As an example, the presumed extinction of the related Tacoma pocket gopher is likely linked directly to residential and commercial development, which has replaced nearly all gopher habitat in the historical range of the subspecies (Stinson 2005, pp. 18, 34, 46). One of the historical Tacoma pocket gopher sites was converted to a large gravel pit and golf course (Stinson 2005, pp. 47, 120; Steinberg 1996, pp. 24, 27). In addition,

two gravel pits are now operating on part of the site recognized as the type locality for the Roy Prairie pocket gopher (Stinson 2005, p. 42), and another is in operation near Tenino (Stinson 2010b, *in litt.*) in the vicinity of the type locality for, and the only known population of, the Tenino pocket gopher.

Multiple pocket gopher sites in Pierce and Thurston Counties may be, or have been, lost to or degraded by gravel pit development, golf course development, residential and commercial development (Stinson 2005, p. 42; Stinson 2007, *in litt.*, and 2010b, *in litt.*) or military base development. Multiple prairies that used to contain uninterrupted expanses of prairie habitat suitable for pocket gophers within the range of the four Thurston/Pierce subspecies have been developed to cities, neighborhoods, agricultural lands, or military bases, and/or negatively impacted by such development, including Baker Prairie, Bush Prairie, Chambers Prairie, Frost Prairie, Grand Mound Prairie, Little Chambers Prairie, Marion Prairie, Roy Prairie, Ruth Prairie, Woods Prairie, Violet Prairie, and Yelm Prairie. Some of these prairie areas still contain smaller areas that support pocket gophers, and some appear to no longer support pocket gophers at all (WDFW 2012).

Where their properties coincide with gopher occupancy, many private land developers and landowners in Thurston County have been required to create gopher set-asides or agree to other mitigation activities in order to obtain development permits from the County (Tirhi 2008, *in litt.*). However, it is unknown if any gophers will remain on these sites due to the small size of the set-asides, extensive grading in some areas

adjacent to set-asides, lack of dedicated funding for enforcement or monitoring of set-aside maintenance (Thurston County Long Range Planning and Resource Stewardship 2011, *in litt.*, p. 2), and lack of control of predation by domestic or feral cats and dogs. In addition, some landowners have received variances from Thurston County that allowed development to occur without a requirement to set aside areas for gophers.

A population of Olympia pocket gophers is located at and around the Port of Olympia's Olympia Airport, which is sited on the historical Bush Prairie. Gophers on Bush Prairie are currently vulnerable to negative impacts from proposed future development by the Port of Olympia and ongoing development by adjacent landowners. The Port of Olympia has plans to develop large portions of the existing grassland that likely supports the largest population of the Olympia pocket gopher in Washington (Stinson 2007, *in litt.*; Port of Olympia and WDFW 2008, p.1; Port of Olympia 2012). The Olympia Airport is realigning the airport runway, which is in known occupied habitat. They continue to work with the Service and WDFW on mitigating airport expansion activities that may negatively impact gophers (Tirhi 2010, *in litt.*).

Olympia, Roy Prairie, Tenino, and Yelm Pocket Gophers. The Olympia pocket gopher has a population at the Olympia Airport that spans several hundred acres, and there are two translocated populations: one at West Rocky Prairie Wildlife Area (some individuals from the Olympia Airport) and one at Wolf Haven (individuals from the Olympia Airport and some from near the intersection of Rich Road and Yelm Highway). The population centered on the Olympia Airport could be negatively

impacted by plans for development both on and off the airport, while the two translocated populations are currently secure from intense commercial and residential development pressures as they occur on conserved lands. The Roy Prairie pocket gopher is known to occur across a large expanse of prairie on JBLM, which is currently secure from the threat of development. The Tenino pocket gopher has a single known population, which has been detected during surveys on the Rocky Prairie NAP, although the intermittent nature of these detections suggests it must be part of a larger metapopulation that occurs across nearby areas that have not been accessible for surveys. No known development poses a threat to the NAP, but any future conversion of the surrounding area to incompatible land use would likely hinder the recovery of this subspecies. The Yelm pocket gophers on Tenalquot prairie (which is owned in large part by JBLM) and Scatter Creek Wildlife Area are also secure from such residential and commercial development, but the Yelm pocket gopher habitat on Rock Prairie north of Old Highway 99 is in an area that is likely to be developed soon, which may negatively affect any local populations in the vicinity.

Loss of Ecological Disturbance Processes, Invasive Species, and Succession

The suppression and loss of ecological disturbance regimes across vast portions of the landscape, such as fire, has resulted in altered vegetation structure in prairies and meadows and has facilitated invasion by native and nonnative woody vegetation, rendering habitat unusable for the four Thurston/Pierce subspecies of the *Mazama* pocket

gopher. The basic ecological processes that maintain prairies and meadows have disappeared from, or have been altered on, all but a few protected and managed sites.

Historically, the prairies and meadows of the south Puget Sound region of Washington are thought to have been actively maintained by the native peoples of the region, who lived here for at least 10,000 years before the arrival of Euro-American settlers (Boyd 1986, entire; Christy and Alverson 2011, p. 93). Frequent burning reduced the encroachment and spread of shrubs and trees (Boyd 1986, entire; Chappell and Kagan 2001, p. 42), favoring open grasslands with a rich variety of native plants and animals. Following Euro-American settlement of the region in the mid-19th century, fire was actively suppressed on grasslands, allowing encroachment by woody vegetation into the remaining prairie habitat and oak woodlands (Franklin and Dyrness 1973 p. 122; Boyd 1986, entire; Kruckeberg 1991, p. 287; Agee 1993, p. 360; Altman *et al.* 2001, p. 262).

Fires on the prairie create a mosaic of vegetation conditions, which serve to maintain native prairie plant communities. In some prairie patches fires will kill encroaching woody vegetation and reset succession back to bare ground, creating early successional vegetation conditions suitable for many native prairie species. Early successional forbs and grasses are favored by Mazama pocket gophers. The historical fire frequency on prairies has been estimated to be 3 to 5 years (Foster 2005, p. 8). On sites where regular fires occur, there is a high complement of native plants and fewer invasive species. These types of fires promote the maintenance of the native short-statured plant communities favored by pocket gophers.

The result of fire suppression has been the invasion of the prairies and oak woodlands by native and nonnative plant species (Dunn and Ewing 1997, p. v; Tveten and Fonda 1999, p. 146), notably woody plants such as the native Douglas-fir and the nonnative Scot's broom. On tallgrass prairies in midwestern North America, fire suppression has led to degradation and the loss of native grasslands (Curtis 1959, pp. 296, 298; Panzer 2002, p. 1297). On northwestern prairies, fire suppression has allowed Douglas-fir to encroach on and outcompete native prairie vegetation for light, water, and nutrients (Stinson 2005, p. 7). This increase in woody vegetation and nonnative plant species has resulted in less available prairie habitat overall and habitat that is unsuitable for and avoided by many native prairie species, including the Mazama pocket gopher (Tveten and Fonda 1999, p. 155; Pearson and Hopey 2005, pp. 2, 27; Olson 2011a, pp. 12, 16). Pocket gophers prefer early successional vegetation as forage. Woody plants shade out the forbs and grasses that gophers prefer to eat, and high densities of woody plants make travel both below and above the ground difficult for gophers. In locations with poor forage, pocket gophers tend to have larger territories, which may be difficult or impossible to establish in densely forested areas. The probability of Mazama pocket gopher occupancy is much higher in areas with less than 10 percent woody vegetation cover (Olson 2011a, p. 16).

On JBLM alone, over 16,000 acres (6,477 ha) of prairie has converted to Douglas-fir forest since the mid-19th century (Foster and Shaff 2003, p. 284). Where controlled burns or direct tree removal are not used as a management tool, this

encroachment will continue to cause the loss of open grassland habitats for Mazama pocket gophers and is an ongoing threat for the species.

Restoration in some of the south Puget Sound grasslands has resulted in temporary control of Scot's broom and other invasive plants through the careful and judicious use of herbicides, mowing, grazing, and fire. Fire has been used as a management tool to maintain native prairie composition and structure and is generally acknowledged to improve the health and composition of grassland habitat by providing a short-term nitrogen addition, which results in a fertilizer effect to vegetation, thus aiding grasses and forbs as they resprout.

Unintentional fires ignited by military training burn patches of prairie grasses and forbs on JBLM on an annual basis. These light ground fires create a mosaic of conditions within the grassland, maintaining a low vegetative structure of native and nonnative plant composition, and patches of bare soil. Because of the topography of the landscape, fires create a patchy mosaic of areas that burn completely, some areas that do not burn, and areas where consumption of the vegetation is mixed in its effects to the habitat. One of the benefits of fire in grasslands is that it tends to kill regenerating conifers, and reduces the cover of nonnative shrubs such as Scot's broom, although Scot's broom seed stored in the soil can be stimulated by fire (Agee 1993, p. 367). Fire also improves conditions for many native bulb-forming plants, such as *Camassia* sp. (camas) (Agee and Dunwiddie 1984, p. 367). On sites where regular fires occur, such as on JBLM, there is a high

complement of native plants and fewer invasive species. These types of fires promote the maintenance of the native short-statured plant communities favored by pocket gophers.

Management practices such as intentional burning and mowing require expertise in timing and technique (i.e., best management practices) to achieve desired results. If applied at the wrong season, frequency, or scale, fire and mowing can be detrimental to the restoration of native prairie species. Excessive and high-intensity burning can result in a lack of vegetation or encourage regrowth to nonnative grasses. Where such burning has occurred over a period of more than 50 years on the artillery ranges of the JBLM, prairies are covered by nonnative forbs and grasses instead of native perennial bunchgrasses (Tveten and Fonda 1999, pp. 154–155).

Mazama pocket gophers are not commonly found in areas colonized by Douglas-fir trees because gophers require forbs and grasses of an early successional stage for food (Witmer *et al.* 1996, p. 96). Mazama pocket gophers observed on JBLM did not occur in areas with high cover of Scot's broom (Steinberg 1995, p. 26). A more recent study on JBLM also found that pocket gopher presence was negatively associated with Scot's broom (Olson 2011a, pp. 12–13, 16). Some subspecies of the Mazama pocket gopher may disperse through forested areas or may temporarily establish territories on forest edges, but there is currently not enough data available to determine how common this behavior may be or which subspecies employ it. The four Thurston/Pierce subspecies occur on prairie-type habitats, many of which, if not actively managed to maintain vegetation in an early-successional state, have been invaded by shrubs and trees that

either preclude the gophers or limit their ability to fully occupy the landscape. Certain typical airport management actions at civilian airports prevent woody vegetation from encroaching onto the areas surrounding the runways and taxiways for flight safety reasons. Woody vegetation encroachment is therefore not a threat at civilian airports.

Military Training

Populations of Mazama pocket gophers occurring on JBLM are exposed to differing levels of training activities on the base. The DOD's proposed actions under their "Grow the Army" initiative include stationing 5,700 new soldiers, new combat service support units, a combat aviation brigade, facility demolition and construction to support the increased troop levels, and additional aviation, maneuver, and live fire training (75 FR 55313; September 10, 2010). The increased training activities will affect nearly all training areas at JBLM, resulting in an increased risk of accidental fires, and habitat destruction and degradation attributable to vehicle use in occupied areas, mounted and dismounted training, bivouac activities, and digging. While training areas on the base have degraded habitat for the Mazama pocket gophers, with implementation of conservation measures, these areas still provide habitat for the Roy Prairie and Yelm subspecies that are found there. JBLM's recently signed Mazama pocket gopher Endangered Species Management Plan (ESMP) will serve to minimize such threats across the base by redirecting some training activities to areas outside of occupied habitat, designating areas where no vehicles are permitted, designating areas where vehicles will remain on roads only, and designating areas where no digging is allowed,

among other conservation measures. JBLM has further committed to enhancing and expanding suitable habitat for the Roy Prairie and Yelm pocket gophers in “priority habitat” areas on base (areas that were proposed as critical habitat); enforcing restrictions on recreational use of occupied habitat by dog owners and horseback riders; and continuing to support the off-base recovery of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher.

Several moderate- to large-sized areas occupied by *Mazama* pocket gophers have been identified on JBLM within the historical range of the Roy Prairie pocket gopher (Pierce County) and Yelm pocket gopher (Thurston County). Their absence from some sites of what is presumed to have been formerly suitable habitat may be related to compaction of the soil due to years of mechanized vehicle training, which impedes burrowing activities of pocket gophers (Steinberg 1995, p. 36). Training infrastructure (roads, firing ranges, bunkers) also degrades gopher habitat and may lead to reduced use of these areas by pocket gophers. For example, as part of the Grow the Army effort, JBLM has plans to add a third rifle range on the south impact area where it overlaps with a densely occupied *Mazama* pocket gopher site. The area may be usable by gophers when the project is completed; however, construction of the rifle range may result in removal of forage and direct mortality of gophers through crushing of burrows (Stinson 2011, *in litt.*). Recent survey access to the center of the artillery impact area on 91st Division Prairie, where bombardment is presumably of the highest intensity, did detect some unspecified level of occupancy by the Roy Prairie pocket gopher (WDFW 2013b, enclosure 1, p. 6). This apparently suitable central portion of the 91st Division Prairie is

subject to repeated and ongoing bombardment, which may create an ecological trap for dispersing juveniles. JBLM training areas have varying levels of use; some allow excavation and off-road vehicle use, while other areas have restrictions that limit off-road vehicle use. The ESMP specifically requires coordination between the JBLM Fish and Wildlife personnel and the JBLM entities responsible for training activities (e.g., Range Support, battalion commanders, and/or first field grade officers) to ensure all parties are aware of where gopher-occupied areas occur in relation to training activities, the effects of training, and the potential ramifications of habitat destruction or animal mortality. Since military training has the potential to directly or indirectly harm or harass *Mazama* pocket gophers, we conclude that these activities will negatively impact the Roy Prairie and Yelm pocket gophers.

JBLM has committed to operational restrictions on military training areas, in order to avoid and minimize potential negative impacts to Roy Prairie and Yelm pocket gophers on portions of the base. Currently-occupied areas will be buffered from training activities, with an emphasis on occupied habitat in “priority habitat” areas. Regular surveys will be conducted with a goal of determining distribution of *Mazama* pocket gophers, protecting gophers and their habitat from disturbance or destruction, and determining population status. Where possible, JBLM will alleviate training pressure by transferring training activities to unoccupied areas where encroaching forest has been removed from former prairie habitat. This strategy has the effect of both releasing large areas of land that were historically prairie and providing unoccupied areas where training is free of the risk of negatively impacting Roy Prairie or Yelm pocket gophers. While the

Service fully supports the implementation of these impact minimization efforts and will continue to collaborate with DOD to address all aspects of training impacts on the species, not all adverse impacts of training on the pocket gophers can be fully avoided. Military training continues to pose a threat to the Roy Prairie and Yelm subspecies at this time.

No military training occurs in the range of the Olympia or Tenino subspecies of the Mazama pocket gopher.

Restoration Activities

Management for invasive species and encroachment of woody plants requires control through equipment, herbicides, and other activities. While restoration has conservation value for the subspecies, management activities to implement restoration may also have directly negative impacts to the subspecies that are the target of habitat restoration if best management practices are not followed.

In the south Puget Sound, Mazama pocket gopher habitat has been degraded and encroached upon by native and nonnative woody plants, including Scot's broom and Douglas-fir, and several Washington State listed noxious weeds, such as *Euphorbia esula* (leafy spurge) and *Centaurea* sp. (knapweed) (Dunn and Ewing 1997, p. v; Vaughan and Black 2002, p. 11). Steinberg (1995, p. 26) observed that pocket gophers on JBLM did not occur in areas with thick Scot's broom, and Olson (2011a, pp. 12–13) also found that

pocket gopher presence was negatively associated with Scot's broom. Most restoration activities are unlikely to have direct impacts on pocket gophers, though removal of nonnative vegetation is likely to temporarily decrease available forage for Mazama pocket gophers and, if heavy equipment is used during the removal (e.g., the mowing of established Scot's broom), burrows and individuals could be crushed. Where best management practices are implemented, these impacts could be minimized or avoided.

Summary of Factor A

Here we summarize the factors associated with the destruction or degradation of habitats for the four Thurston/Pierce subspecies of the Mazama pocket gopher.

Much of the habitat originally used by the four Thurston/Pierce subspecies has been fragmented and/or lost to development. Residential and commercial development in the restricted remaining range of the four Thurston/Pierce subspecies is expected to continue into the future, and is likely to continue to result in substantial negative impacts to the subspecies' habitat and populations. Development removes forage vegetation, renders soils unsuitable for burrowing by covering them with impervious surfaces or compacting them, or by grading or removing them. Proposed development triggers Critical Areas Ordinances (CAOs) in Thurston and Pierce Counties where the pocket gophers occur, but resultant set-asides are not always adequate to conserve local populations into the future (for further discussion on existing regulatory mechanisms, see **Factor D**).

Past military training at JBLM has likely negatively affected two of the four Thurston/Pierce subspecies (Roy Prairie and Yelm pocket gophers) by direct and indirect mortality from bombardment and other types of military training, unintentional fires, and soils compaction on prairies. These threats are expected to continue in the future due to planned increases in stationing and military training at JBLM, but the negative impacts will be partially ameliorated through the measures outlined in the ESMP recently developed for the conservation benefit of the Mazama pocket gopher.

The four Thurston/Pierce subspecies of the Mazama pocket gopher also face threats from encroachment of native and nonnative plant species into their prairie environments due to succession and fire suppression, and are particularly negatively affected by the encroachment of woody vegetation. This has resulted in loss of forage vegetation for pocket gophers, as well as loss of burrowing habitat, as tree and shrub roots overtake the soils. Degradation of habitat due to encroachment by woody species such as Scot's broom and Douglas-fir continues to be an ongoing significant threat to the four Thurston/Pierce subspecies of the Mazama pocket gopher.

While restoration activities are intended to improve prairie ecosystem function, some types of restoration have the potential to negatively impact Mazama pocket gophers, such as instances where heavy equipment may be used in occupied areas, especially when best management practices such as avoidance of active areas are not carefully implemented.

The Washington prairie ecosystem upon which the four Thurston/Pierce subspecies of the *Mazama* pocket gopher primarily depend has been reduced by an estimated 90 to 95 percent over the past 150 years, with less than 10 percent of the native prairie remaining in the south Puget Sound region today. Due to loss and degradation of gopher habitat from ongoing and future residential and commercial development, encroachment of shrubs and trees into their prairie habitats, and negative impacts from both current and future military training (for Roy Prairie and Yelm subspecies), we conclude that the threats to the habitat of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher are significant.

Factor B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes

Overutilization of species results when the number of individuals removed from the system exceeds the ability of the population of the species to sustain its numbers or reduces populations of the species to a level such that it is vulnerable to other influences (threats) upon its survival. This overutilization can result from removal of individuals from the wild for commercial, recreational, scientific, or educational purposes.

One local population of the *Mazama* pocket gopher at Lost Lake Prairie in Mason County (Shelton pocket gopher) may have been extirpated as a result of collecting by Dalquest and Scheffer in the late 1930s or early 1940s (Dalquest and Scheffer 1944a, p.

314), though based on the numbers of gophers removed, this must have already been a very small local population prior to such collection. Later, Steinberg (1996, p. 23) conducted surveys in the vicinity and found no evidence of pocket gophers. In addition, Mazama pocket gophers in Washington were used in a rodenticide experiment as recently as 1995 (Witmer *et al.* 1996, p. 97). Witmer *et al.* (1996, p. 95) claim these were likely *Thomomys mazama tumuli* (Tenino pocket gophers), but these Lacey-area gophers may fall in the range of the Olympia pocket gopher. As awareness of the plight of the Mazama pocket gopher subspecies in Washington has grown, the scientific community has found less invasive ways to monitor and study these animals. Further, the agricultural and silvicultural communities are developing new practices that allow for both crop production and the use of suitable habitat by Mazama pocket gophers.

Beyond direct collection of individuals, research may affect pocket gopher populations through other avenues as well. During the initial translocation experiments and research conducted by WDFW at Wolf Haven and West Rocky Prairie, respectively, between 2005 and 2011, pocket gopher mortality was extremely high (Linders 2008, p. 9; Olson 2011c; Olson 2012a, *in litt.*). In the case of the Wolf Haven translocations, gophers were removed from development sites near Olympia Airport and at the intersection of Yelm Highway and Rich Road, where pocket gopher mortality would have likely occurred as a result of direct negative impacts due to site development (crushing of individuals and burrows from heavy machinery excavation, grading, and construction, etc.). Pocket gophers continue to occupy Wolf Haven, despite there being no known occurrence records for the site prior to translocations. Similarly, pocket

gophers were not known to inhabit West Rocky Prairie prior to translocation experiments there, though West Rocky Prairie was likely contiguous with Rocky Prairie in the recent past, making it probable that West Rocky Prairie was within the historical range of the Tenino pocket gopher. In the case of the West Rocky Prairie translocated population, pocket gophers were taken from the Olympia Airport, where a large and well-studied expanse of densely occupied Mazama pocket gopher habitat occurs in Thurston County. Although no comparative analysis has been conducted on the number of individuals at the Olympia Airport site before and after the translocations, there is no evidence that the source population suffered any adverse effects from the research conducted. The analysis and evaluation of this research is ongoing. Aside from historical negative impacts from collection and outside of this controlled research, we have no information or evidence that overutilization of any four Thurston/Pierce subspecies of the Mazama pocket gopher is an ongoing threat now or will become a threat in the future.

Summary of Factor B

In summary, although there is some evidence of historical mortality from overutilization of the Mazama pocket gopher, and there may have been some recent mortality from utilization of the Mazama pocket gopher for research purposes, we have no information to indicate that these activities have negatively impacted the subspecies as a whole, and have no information to suggest that overutilization is presently occurring or will become a significant threat in the future. In addition, we have no evidence that

commercial, recreational, scientific, or educational use is occurring at a level that would pose a threat to any of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher.

Factor C. Disease or Predation

Disease

Most healthy ecosystems include organisms such as viruses, bacteria, fungi, and parasites that cause disease. Healthy wildlife and ecosystems have evolved defenses to fend off most diseases before they have devastating impacts. An ecosystem with high levels of biodiversity (diversity of species and genetic diversity within species) is more resilient to the impacts of disease because there are greater possibilities that some species and individuals within a species have evolved resistance, or if an entire species is lost, that there will likely be another species to fill the empty niche.

Where ecosystems are not healthy due to a loss of biodiversity and threats such as habitat loss, climate change, pollutants or invasive species, wildlife and ecosystems are more vulnerable to emerging diseases. Diseases caused by or carried by invasive species can be particularly severe threats, as native wildlife may have no natural immunity to them (National Wildlife Federation 2012).

Our review of the best available scientific and commercial data found no evidence to indicate that disease is a threat to the *Mazama* pocket gopher subspecies found in

Washington. We conclude that disease is not a threat to the subspecies now, nor do we anticipate it to become so in the future.

Predation

Predation is a process of major importance in influencing the distribution, abundance, and diversity of species in ecological communities. Generally, predation leads to changes in both the population size of the predator and that of the prey. In unfavorable environments, prey species are stressed or living at low population densities such that predation is likely to have negative effects on all prey species, thus lowering species richness. In addition, when a nonnative predator is introduced to the ecosystem, negative effects on the prey population may be higher than those from co-evolved native predators. The effect of predation may be magnified when populations are small, and the disproportionate effect of predation on declining populations has been shown to drive rare species even further towards extinction (Woodworth 1999, pp. 74–75).

Predation has an impact on populations of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher. For these four subspecies, urbanization has resulted in not only habitat loss, but the increased exposure to feral and domestic cats and dogs. Domestic cats are known to have serious impacts on small mammals and birds and have been implicated in the decline of several endangered and threatened mammals, including marsh rabbits in Florida and the salt-marsh harvest mouse in California (Ogan and Jurek 1997, p. 89). Domestic cats and dogs have been specifically identified as common

predators of pocket gophers (Wight 1918, p. 21; Henderson 1981, p. 233; Case and Jasch 1994, p. B-21) and at least two Mazama pocket gopher locations were found as a result of house cats bringing home pocket gopher carcasses (WDFW 2001, entire). Informal interviews with area biologists document multiple incidents of domestic pet predation on pocket gophers generally as well as Mazama pocket gophers specifically (Clouse 2012, *in litt.*; Chan 2013, *in litt.*; Skriletz 2013 *in litt.*; Wood 2013 *in litt.*). There is also one recorded instance of a WDFW biologist being presented with a dead Mazama pocket gopher by a dog during an east Olympia, Washington, site visit in 2006 (Burke Museum 2012; McAllister 2013, *in litt.*). Some local populations of the Mazama pocket gopher occur in areas where people recreate with their dogs, bringing these potential predators into environments that may otherwise be relatively free of them, consequently increasing the risks to individual pocket gophers and populations that may be small and isolated.

The four Thurston/Pierce subspecies of the Mazama pocket gopher occur in rapidly developing areas. Local populations that survive commercial and residential development (adjacent to and within habitat) are potentially vulnerable to extirpation by domestic and feral cats and dogs (Henderson 1981, p. 233; Case and Jasch 1994, p. B-21). As stated previously, predation is a natural part of the Mazama pocket gopher's life history; however, the effect of predation may be magnified when populations are small and habitat is fragmented. The disproportionate effect of additional predation on declining populations has been shown to drive rare species even further towards extinction (Woodworth 1999, pp. 74–75). Predation, particularly from nonnative species, will likely continue to be a threat to the four Thurston/Pierce subspecies of the Mazama

pocket gopher now and in the future. This is particularly likely where development abuts gopher habitat, resulting in increased numbers of cats and dogs in the vicinity, and in areas where people recreate with their dogs—particularly if dogs are off-leash and not prevented from harassing wildlife. In such areas where local populations of pocket gophers are already small, this additional predation pressure (above natural levels of predation) is expected to further negatively impact population numbers.

Summary of Factor C

Based on our review of the best available information, we conclude that disease is not a threat to the four Thurston/Pierce subspecies of the *Mazama* pocket gopher now, nor do we expect it to become a threat in the future.

Areas of suitable occupied habitat for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher are small and declining and often occur as fragments of isolated habitat islands, frequently in proximity to increasingly urbanized areas with high numbers of cats and dogs. This consideration, in conjunction with the fact that feral and domestic cats and dogs are known predators of *Mazama* pocket gophers, leads us to conclude that predation by feral and domestic pets (cats and dogs) likely has a negative impact on these subspecies. At present, this impact is likely greatest on the Olympia and Yelm subspecies, which occur in close proximity to intensely developed areas; the Roy Prairie pocket gopher occurs primarily on JBLM, where DOD is working with the Service to diminish the negative impacts of active military training through conservation measures

outlined in the ESMP. The relatively fewer known occurrences of the Roy Prairie pocket gopher that have been identified off the base are likely subject to increased predation pressure from feral and domestic cats and dogs where they are situated closely to developed areas. The Tenino pocket gopher is not currently surrounded by properties subject to increasing development, and thus predation pressure for the Tenino pocket gopher is likely restricted to that of native predators, such as coyotes and birds of prey. Therefore, based on our review of the best available scientific and commercial information, we conclude that predation is currently a threat to the four Thurston/Pierce subspecies of the Mazama pocket gopher now and will continue to be in the future.

Factor D. The Inadequacy of Existing Regulatory Mechanisms

Under this factor, we examine whether existing regulatory mechanisms are inadequate to address the threats to the subspecies discussed under the other factors. Section 4(b)(1)(A) of the Act requires the Service to take into account “those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species....” In relation to Factor D under the Act, we interpret this language to require the Service to consider relevant Federal, State, and Tribal laws, regulations, and other such mechanisms that may minimize any of the threats we describe in threat analyses under the other four factors, or otherwise enhance conservation of the subspecies. We give strongest weight to statutes and their implementing regulations and to management direction that stems from those laws and

regulations. An example would be State governmental actions enforced under a State statute or constitution, or Federal action under statute.

The following section includes a discussion of Federal, State, Tribal, or local laws, regulations, or treaties that apply to the Mazama pocket gopher. It includes legislation for Federal land management agencies and State and Federal regulatory authorities affecting land use or other relevant management.

United States Federal Laws and Regulations

No Federal laws in the United States specifically address the Mazama pocket gopher or any of its subspecies.

The Sikes Act (16 U.S.C. 670) authorizes the Secretary of Defense to develop cooperative plans with the Secretaries of Agriculture and the Interior for natural resources on public lands. The Sikes Act Improvement Act of 1997 requires Department of Defense installations to prepare Integrated Natural Resources Management Plans (INRMPs) that provide for the conservation and rehabilitation of natural resources on military lands consistent with the use of military installations to ensure the readiness of the Armed Forces. INRMPs incorporate, to the maximum extent practicable, ecosystem management principles and provide the landscape necessary to sustain military land uses. While INRMPs are not technically regulatory mechanisms because their implementation

is subject to funding availability, they can be an added conservation tool in promoting the recovery of endangered and threatened species on military lands.

On JBLM in Washington, several policies and an INRMP are in place to provide conservation measures to grassland-associated species, including the endangered species, Taylor's checkerspot butterfly (*Euphydryas editha taylori*), and threatened species, streaked horned lark (*Eremophila alpestris strigata*), that occupy training lands on the military base. JBLM in partnership with local agencies and nongovernmental organizations has provided funding to conserve these species through the acquisition of new conservation properties and management actions intended to improve the amount and distribution of habitat for these species. JBLM has also provided funding to reintroduce declining species into suitable habitat on and off military lands. In June 2011, representatives from DOD (Washington, D.C., office) met with all conservation partners to assess the success of this program and make decisions as to future funding needs. Support from the Garrison Commander of JBLM and all partners resulted in an increase in funding for habitat management and acquisition projects for these species on JBLM.

The Service has worked closely with the DOD to develop conservation measures for military training as well as recreation activities that occur within "priority habitat" areas (areas that were proposed as critical habitat) for the Roy Prairie and Yelm Mazama pocket gophers on JBLM. These include, but are not limited to, areas where no vehicles are permitted on occupied habitat, where vehicles are restricted to roads, and where

digging is prohibited. The ESMP further dictates the establishment of buffer zones around occupied areas and specific coordination and training requirements for entities responsible for troops who may train in occupied habitat (e.g., Range Support, battalion commanders, and/or first field grade officers). Rules regarding recreation will be fully funded and enforced in all occupied areas.

JBLM policies include Army Regulation 420–5, which covers the INRMP, and AR–200–1. This is an agreement between each troop and DOD management that actions taken by each soldier will comply with restrictions placed on specific Training Areas, or range lands. Within the INRMP, the wildlife branch of the DOD has developed an updated ESMP that provides site-specific management and protection actions that are taken on military lands for the conservation of the Mazama pocket gopher. The ESMP provides assurances of available funding to achieve intended goals of Mazama pocket gopher conservation. Compliance, implementation, and effectiveness monitoring reports will be submitted annually to the USFWS. ESMPs require regular updates to account for local or rangewide changes in species status. INRMPs also have a monitoring component that would require modifications in the form of, or adaptive management to, planning actions when the result of that specific action may differ from the intent of the planned action.

Under the Sikes Act, the JBLM INRMP (and associated ESMP) includes provisions that will promote protection and conservation practices to support the four

Thurston/Pierce subspecies of the Mazama pocket gopher (due to conservation efforts they help fund both on- and off-base). These efforts will facilitate the prevention of further population declines in the Roy Prairie and Yelm pocket gophers associated with habitat loss or destruction on JBLM properties. However, current military actions are likely to continue to result in the mortality of individual animals and damage or destroy occupied habitat, even with the above mitigating efforts implemented by the military. Thus we conclude that the regulatory mechanisms in place at JBLM are not sufficient to fully offset the negative impacts of military training activities to the Roy Prairie and Yelm pocket gophers where they occur on the base.

State Laws and Regulations

Although the State of Washington has no State Endangered Species Act, the Washington Fish and Wildlife Commission has authority to list species as endangered or threatened (in addition to other possible designations; Revised Code of Washington (RCW) 77.12.020). The Mazama pocket gopher is currently listed as a threatened species by WDFW (the State does not list each of the Mazama pocket gopher subspecies as threatened individually; all eight subspecies of the Mazama pocket gopher that occur in Washington are listed by the State as threatened as a single taxon). State-listed species are protected from direct take and/or malicious 'take', but their habitat is not protected (RCW 77.15.120). State listings generally consider only the status of the species within the State's borders, and do not depend upon the same considerations as a potential Federal listing. The Washington State Growth Management Act of 1990 requires

counties to develop CAOs that address development impacts to important wildlife habitats, thus habitat receives protection through county or municipal CAOs. CAOs may require environmental review and habitat management plans for development proposals that affect State-listed species, depending on the county. The specifics and implementation of CAOs vary by county (see specific discussions below).

The Mazama pocket gopher (i.e., all subspecies of Mazama pocket gopher in Washington) is a Priority Species under WDFW's Priority Habitats and Species Program (WDFW 2008, pp. 19, 80, 120). As Priority Species, the four Thurston/Pierce subspecies of the Mazama pocket gopher benefit from some protection of their habitats under environmental reviews of applications for county or municipal development permits (Stinson 2005, pp. 46, 70). WDFW provides Priority Habitats and Species Management Recommendations to local government permit reviewers, applicants, consultants, and landowners in order to avoid, minimize, and mitigate negative impacts to Mazama pocket gophers and their habitat (WDFW 2011, p.1). These recommendations are not regulatory, but are based on best available science.

WDNR manages approximately 66,000 ac (26,710 ha) of lands as Natural Area Preserves (NAP). NAPs provide the highest level of protection for excellent examples of unique or typical land features in Washington State. These NAPs provide protection for the Mazama pocket gopher where they overlap with Mazama pocket gopher habitat, and, based on their proactive management, we do not find that the inadequacy of existing

regulatory mechanisms poses a threat to the four Thurston/Pierce subspecies of the *Mazama* pocket gopher on WDNR lands.

Based on our review of the existing regulatory mechanisms for the State of Washington, we conclude that, while the State's regulations may protect individuals of the subspecies, they do not guarantee protection for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher from further population declines associated with habitat loss or inappropriate management, nor do they provide for these subspecies' long-term population viability.

Local Laws and Regulations

The Washington State Growth Management Act (GMA) of 1990 requires all jurisdictions in the State to designate and protect critical areas. The State defines five broad categories of critical areas, including: (1) wetlands; (2) areas with critical recharging effects on aquifers used for potable water; (3) fish and wildlife habitat conservation areas; (4) frequently flooded areas; and (5) geologically hazardous areas. *Quercus garryana* (Oregon white oak) habitat and prairie both predominantly fall into the category of fish and wildlife habitat conservation areas, though due to the coarse nature of prairie soils and the presence of wet prairie habitat across the landscape, critical area protections for crucial aquifer recharge areas and wetlands may also address some prairie habitat protection. The GMA requires counties to develop CAOs that address development impacts to important wildlife habitats. The specifics and implementation of

CAOs vary by county, although the Mazama pocket gopher is recognized as a species of local importance in the CAOs of Mason, Thurston, and Pierce Counties. In Thurston County, when development activities are proposed where pocket gophers are likely to be present, the developer must determine if gophers are present, assess the impact to gophers, and submit a Habitat Management Plan. Habitat Management Plans have been developed for Mazama pocket gophers for many sites in Thurston County since 2006. In Pierce County, a Habitat Assessment Report is required only where Mazama pocket gophers are known to be present (but not in areas where they are likely to be present, but have not been documented), resulting in substantially weaker protection for the Roy Prairie pocket gophers that exist off JBLM.

Due to their State-listed status in Washington, Mazama pocket gophers are included in three county CAOs in the State (Mason, Pierce, and Thurston). Within counties, CAOs apply to all unincorporated areas, but incorporated cities are required to independently address critical areas within their UGA. The incorporated cities within the range of the four Thurston/Pierce subspecies of the Mazama pocket gopher in Washington are: (1) Olympia, Lacey, Rainier, Tenino, Tumwater, and Yelm (Thurston County); and (2) Roy (Pierce County). Actions in gopher habitat under such ordinances are intended to protect and minimize impacts to gophers and their habitats. As such, development applications in suspected gopher areas have spurred surveys and habitat assessments by WDFW or contractors in Thurston and Pierce Counties. While survey techniques are more-or-less consistent from site to site, potential development properties found to be occupied by gophers are subject to varied species protection measures. These

measures have included habitat set-asides, on-site fencing, signage, and suggested guidelines for long-term management. These measures are inadequate for protecting the site from nonnative predators, ensuring long-term habitat functioning or population viability, providing connectivity to adjacent habitat areas, or prompting corrective management actions if the biological functioning of the set-aside declines.

In 2009, the Thurston County Board of Commissioners adopted Interim Ordinance No. 14260, which strengthened protections for prairie and Oregon white oak habitat in consideration of the best available science. Thurston County worked with the Service and WDFW to include an up-to-date definition of prairie habitat and to delineate soils where prairie habitat is likely to occur. In July 2010, the ordinance was renewed and amended, including revisions to the prairie soils list and changes to administrative language. Since July 2010, the interim prairie ordinance has been renewed on a 6-month basis. The provisions of this ordinance were made permanent with the adoption of Thurston County's CAO in July 2012. Several prairie species were also included as important species subject to critical areas regulation, including three subspecies of the Mazama pocket gopher (for Thurston County, these would be the Olympia, Tenino, and Yelm pocket gophers, although the CAO doesn't separate out subspecies by name) (Thurston County 2012, p. 1).

Implementation of the Thurston County CAOs includes delineation of prairie soils at the time of any land use application. County staff use the presence of prairie soils and soils identified as Mazama pocket gopher habitat as well as known presence of these or

other prairie-dependent species to determine whether prairie habitat and/or soils that support the Mazama pocket gopher may be present at a site and negatively impacted by the land use activity. After a field review, if prairie habitat, gopher soils, or one of these species is found on the site and impacts to the prairie habitat or occupied area cannot be avoided through changes to the development application, the County requires a habitat management plan (HMP) to be developed, typically by a consultant for the landowner, in accordance with WDFW's Priority Habitats and Species Management Recommendations. This HMP specifies how site development should occur, and assists developers in achieving compliance with CAO requirements to minimize negative impacts to the prairie habitat and species. The HMPs typically include onsite fencing and semi-annual mowing. Mitigation for prairie impacts may also be required, on-site or off (Thurston County 2012, p. 2). HMPs are required to be submitted to WDFW for review as part of the permitting process, but WDFW biologists only review HMPs as staff time allows, and the permitting county or city is not required to incorporate WDFW comments, thus WDFW review is not a required step before implementation by a developer. After HMP development, the County may still vacate all or part of the HMP if it determines a reasonable use exception (discussed towards the end of this section) is appropriate.

Measures are implemented with varying degrees of biological assessment, evaluation, and monitoring to ensure ecological success. Unless a reasonable use exception is determined by Thurston County, development properties occupied by Mazama pocket gophers are required to set aside fenced, signed areas for pocket gopher protection that must be maintained into the future. However, the required fencing is often

inadequate to exclude predators, and the size of the set-asides may not be large enough to sustain a population of gophers over time. Additionally, there appears to be no mechanism in place for oversight to ensure that current and future landowners are complying with the habitat maintenance requirements, so within these set-asides, pocket gopher habitat may become unsuitable over time. Because monitoring is a County policy issue, with no dedicated funding (Thurston County Long Range Planning and Resource Stewardship 2011, *in litt.*, p. 2), legal procedures to ensure performance, permanency, funding, and enforcement for long-term site stewardship are inadequate. Enforcement is largely complaint driven, and there is no scheduled monitoring of HMP set-asides due to lack of available staff (Clark 2013, *in litt.*). Consequently, for the Mazama pocket gophers negatively impacted by development in Thurston County, the contribution of these sites to maintaining pocket gopher populations and viability is unreliable for long-term conservation.

For a few property owners in Thurston County, the size of the set-aside would have precluded the proposed use of the properties. In these cases, landowners may apply for a “reasonable use exception,” which would allow development to proceed if approved. In some cases, gophers that could be live-trapped have been moved (translocated) to other locations. These were termed emergency translocations. In cases such as this, or where the set-aside doesn’t wholly overlap all occupied habitat, destruction of occupied habitats (due to building construction, grading or paving over, etc.) likely results in death of individuals due to the gopher’s underground existence and

sedentary nature, which makes them vulnerable in situations where their burrows are crushed.

County-level CAOs do not apply to incorporated cities within county boundaries, thus the incorporated cities of Lacey, Olympia, Rainier, Tenino, Tumwater, and Yelm that overlap the ranges of the four Thurston/Pierce subspecies of the Mazama pocket gopher do not provide the same specificity of protection as the Thurston County CAO. Below we address the relevant city ordinances that overlap the subspecies' ranges. We conclude below with a summary of our evaluation of these existing ordinances in regard to the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher.

The City of Lacey. The City of Lacey CAO includes in its definition of “critical area” any area identified as habitat for a Federal or State endangered, threatened, or sensitive species or State-listed priority habitat, and calls these Habitat Conservation Areas (HCAs) (Lacey Municipal Code (LMC) 14.33.060). These areas are defined through individual contract with qualified professional biologists on a site-by-site basis as development is proposed. The Code further states that, “No development shall be allowed within a habitat conservation area or buffer [for a habitat conservation area] with which state or federally endangered, threatened, or sensitive species have a primary association” (LMC 14.33.117).

The City of Olympia. The City of Olympia's municipal code states that “The Department [City] may restrict the uses and activities of a development proposal which

lie within one thousand feet of important habitat or species location,” defined by WDFW’s Priority Habitat and Species (PHS) Management Recommendations of 1991, as amended (Olympia Municipal Code (OMC) 18.32.315 B). When development is proposed within 1,000 ft (305 m) of habitat of a species designated as important by Washington State, the Olympia CAO requires the preparation of a formal “Important Habitats and Species Management Plan” unless waived by WDFW (OMC 18.32.325).

The City of Rainier. The City of Rainier municipal code identifies “critical areas as defined by RCW 36.70A.030 to include...fish and wildlife habitat areas” (Rainier Municipal Code (RMC) 18.100.030A) and further “protects unique, fragile, and valuable elements of the environment, including critical fish and wildlife habitat” (RMC 180.100.030D). The City of Rainier mandates protective measures that include avoiding impact to critical areas first and mitigation second (RMC 18.100.B030B). Fish and wildlife habitat critical areas may be designated either by a contracted “qualified professional” or a qualified city employee (RMC 18.100.H040H).

The City of Tenino. The City of Tenino municipal code gives Development Regulations for Critical Areas and Natural Resource Lands that include fish and wildlife habitat areas (Tenino Municipal Code (TMC) 18D.10.030 A) and further “protects unique, fragile, and valuable elements of the environment, including critical fish and wildlife habitat” (TMC 18D.10.030 D). The City of Tenino references the WDNR Critical Areas Fish and Wildlife Habitat Areas-Stream Typing Map and the WDFW PHS Program and PHS Maps as sources to identify fish and wildlife habitat (TMC 18D.10.140

E1, 2). The City also defines critical fish and wildlife species habitat areas as those areas known to support or have “a primary association with State or Federally listed endangered, threatened, or sensitive species of fish or wildlife (specified in 50 CFR 17.11, 50 CFR 17.12, WAC 232–12–011) and which, if altered, may reduce the likelihood that the species will survive and reproduce over the long term” (TMC 18D.40.020A, B).

The City of Tumwater. The City of Tumwater CAO outlines protections for HCAs and for “habitats and species of local importance.” Tumwater’s HCAs are established on a case-by-case basis by a “qualified professional” as development is proposed and the HCAs are required to be consistent with the recommendations issued by the WDFW (Tumwater Municipal Code (TMC) 16.32.60). Species of local importance are defined as locally significant species that are not State-listed as threatened, endangered, or sensitive, but live in Tumwater and are of special importance to the citizens of Tumwater for cultural or historical reasons, or if the City is a critically significant portion of its range (TMC 16.32.055 A). TMC 16.32.050 A.1 further states that Areas with which State or Federally designated endangered, threatened, and sensitive species have a primary association are considered fish and wildlife habitat areas that are to be protected within the city of Tumwater. Tumwater is considered a “critically significant portion of a species’ range” if the species’ population would be divided into nonviable populations if it is eliminated from Tumwater” (TMC 16.32.055 A2). Species of local importance are further defined as “State monitor” or “candidate species” where Tumwater is a significant portion of its range such that a significant reduction or

elimination of the species from Tumwater would result in changing the status of the species to that of State endangered, threatened, or sensitive (TMC 16.32.055 A3).

The City of Yelm. The municipal code of Yelm states that it will “regulate all uses, activities, and developments within, adjacent to, or likely to affect one or more critical areas, consistent with the best available science” (Yelm Municipal Code (YMC) 14.08.010 E4f) and mandates that “all actions and developments shall be designed and constructed to avoid, minimize, and restore all adverse impacts.” Further, it states that “no activity or use shall be allowed that results in a net loss of the functions or values of critical areas” (YMC 14.08.010 G) and “no development shall be allowed within a habitat conservation area or buffer which state or federally endangered, threatened, or sensitive species have a primary association, except that which is provided for by a management plan established by WDFW or applicable state or federal agency” (YMC 14.080.140 D1a). The City of Yelm municipal code states that by “limiting development and alteration of critical areas” it will “maintain healthy, functioning ecosystems through the protection of unique, fragile, and valuable elements of the environment, and . . . conserve the biodiversity of plant and animal species” (17.08.010 A4b).

The City of Roy. The CAO for the city of Roy (Pierce County) defines HCAs according to WDFW PHS (Roy Municipal Code (RMC) 10-5E1 C), alongside habitats and species of local importance as identified by the City (RMC 10-5E1 D). HCAs are delineated by qualified professional fish and wildlife biologists (RMC 10-5-9 A5). These

HCAs are subject to mitigation if direct impacts to the HCA are unavoidable (RMC 10-5-13 E3).

Summary. County and City CAOs have been crafted with the intent of preserving the maximum amount of biodiversity while at the same time encouraging high-density development within their respective UGAs. County and City CAOs require that potential fish and wildlife habitat be surveyed by qualified professional habitat biologists as development is proposed (with the exception of Rainier, where a qualified city staffer may complete the survey). It should be noted that, although the cities of Rainier, Roy, Tenino, and Yelm have language relating to protection of State-listed or locally important species, none of these four cities are presently requiring surveys for Mazama pocket gophers to be conducted as part of the development permit review process, despite the fact that it is listed by the State as a threatened species, as is the case in the cities of Lacey, Olympia, and Tumwater (WDFW 2013b, enclosure 1, p. 8). An HCA is determined according to the WDFW PHS list, which is associated with WDFW management recommendations for each habitat and species. If an HCA is identified at a site, the development of the parcel is then subject to the CAO regulations. Mitigation required by each County or City CAO prioritizes reconsideration of the proposed development action in order to avoid the impact to the HCA.

These efforts are laudable, but are unlikely to prevent isolation of local populations of sensitive species. Increased habitat fragmentation and degradation, decreased habitat connectivity, and pressure from onsite and offsite factors are not fully

taken into consideration in the establishment of these mitigation sites. This may be due to a lack of standardization in assessment protocols, though efforts have been made on the part of WDFW to implement training requirements for all “qualified biologists” who survey for pocket gopher presence. Variability in the expertise and training of “qualified habitat biologists” has led to broad variation in the application of CAO guidelines in completion of the HMPs. Coupled with the lack of requirement for WDFW to review and approve every HMP and flexibility in application of county and city CAO guidelines, this variability does not equally or adequately support the conservation of Mazama pocket gophers and their habitat.

Connectivity of populations, abundance of resources (e.g., forage habitat), and undisturbed habitat are three primary factors affecting plant and animal populations. The piecemeal pattern that development typically creates is difficult to reconcile with the needs of the Mazama pocket gopher within a given location. Further, previously common species may become uncommon due to disruption by development, and preservation of small pockets of habitat is unlikely to prevent extirpation of some species without intensive species management, which is beyond the scope of individual CAOs. The four Thurston/Pierce subspecies of the Mazama pocket gopher are affected by habitat loss through development and conversion. Protective measures undertaken while development of lands is taking place may provide benefits for these species; however, based on our review of the Washington State, County, and City regulatory mechanisms, we conclude that these measures are currently inadequate to protect the four

Thurston/Pierce subspecies of the Mazama pocket gopher from further population declines associated with habitat loss, inappropriate management, and loss of connectivity.

Summary of Factor D

In summary, the existing regulatory mechanisms described above are not sufficient to significantly reduce or remove the negative threats presently experienced by the four Thurston/Pierce subspecies of the Mazama pocket gopher. Lack of essential habitat protection under State laws leaves these subspecies at continued risk of habitat loss and degradation.

On JBLM, regulations applying to the Mazama pocket gopher are covered by the current INRMP and ESMP. We conclude that military training, as it currently occurs, causes direct mortality of individuals and negatively affects habitat for the Roy Prairie and Yelm subspecies of the Mazama pocket gopher in all areas where training and the subspecies overlap. Both the Roy Prairie pocket gopher and the Yelm pocket gopher are known to occur on JBLM. Within the estimated range of the Roy Prairie pocket gopher, more than 80 percent of the soils known to be used by the subspecies are within JBLM's boundaries. JBLM also provides roughly 14 percent of the area of soils known to be used by the Yelm pocket gopher within its range. Military training, despite the policies and regulations in place on JBLM, will continue to result in mortality events and loss and destruction of occupied Roy Prairie and Yelm pocket gopher habitat; thus we conclude that the inadequacy of existing regulatory mechanisms poses a threat to the Roy Prairie

and Yelm subspecies on JBLM lands. In addition, as discussed in the **Summary of Factors Affecting the Species**, where these subspecies occur off JBLM lands and are not covered by the ESMP, we do not consider existing regulatory mechanisms to be adequate to ameliorate threats to the subspecies (in Pierce County for the Roy Prairie pocket gopher and Thurston County for the Yelm pocket gopher).

The Washington CAOs generally provide conservation measures to minimize habitat removal and direct effects to the four Thurston/Pierce subspecies of the Mazama pocket gopher. However, habitat removal and degradation, direct loss of individuals, increased fragmentation, decreased connectivity, and the lack of consistent regulatory mechanisms to address the threats associated with these effects continues to occur.

Based upon our review of the best commercial and scientific data available, we conclude that the existing regulatory mechanisms are inadequate to reduce the threats experienced by the four Thurston/Pierce subspecies of the Mazama pocket gopher now or in the future.

Factor E. Other Natural or Manmade Factors Affecting Its Continued Existence

Low Genetic Diversity, Small or Isolated Populations, and Low Reproductive Success

Most species' populations fluctuate naturally, responding to various factors such as weather events, disease, and predation. Andrén (1999, p. 358), however, suggested

that population decline is more likely when habitat quality declines and habitat fragmentation increases. Populations that are small, fragmented, or isolated by habitat loss or modification of naturally patchy habitat, and other human-related factors, are more vulnerable to extirpation by natural randomly occurring events, cumulative effects, and to genetic effects that plague small populations, collectively known as small population effects. These effects can include genetic drift (loss of recessive alleles), founder effects (over time, an increasing percentage of the population inheriting a narrow range of traits), and genetic bottlenecks leading to increasingly lower genetic diversity, with consequent negative effects on evolutionary potential.

To date, of the eight subspecies of the *Mazama* pocket gopher in Washington, only the Olympic pocket gopher has been documented as having low genetic diversity (Welch and Kenagy 2008, p. 7), although the six other extant subspecies have local populations that are small, fragmented, and physically isolated from one another. The four Thurston/Pierce subspecies of the *Mazama* pocket gopher face threats from further loss or fragmentation of habitat. Historically, *Mazama* pocket gophers probably persisted by continually recolonizing habitat patches after local extinctions. This process, in concert with widespread development and conversion of habitat, has resulted in widely separated populations since intervening habitat corridors are now gone, likely stopping much of the natural recolonization that historically occurred (Stinson 2005, p. 46). Although the four Thurston/Pierce subspecies of the *Mazama* pocket gopher are not known to have low genetic diversity, small population sizes at most sites, coupled with disjunct and fragmented habitat, may contribute to further population declines. Little is

known about the local or rangewide reproductive success of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher.

Climate Change

Our analyses under the Act include consideration of ongoing and projected changes in climate. The terms “climate” and “climate change” are defined by the Intergovernmental Panel on Climate Change (IPCC). The term “climate” refers to the mean and variability of different types of weather conditions over time, with 30 years being a typical period for such measurements, although shorter or longer periods also may be used (IPCC 2007a, p. 78). The term “climate change” thus refers to a change in the mean or variability of one or more measures of climate (e.g., temperature or precipitation) that persists for an extended period, typically decades or longer, whether the change is due to natural variability, human activity, or both (IPCC 2007a, p. 78).

Scientific measurements spanning several decades demonstrate that changes in climate are occurring, and that the rate of change has been faster since the 1950s. Examples include warming of the global climate system, substantial increases in precipitation in some regions of the world, and decreases in other regions. (For these and other examples, see IPCC 2007a, p. 30; and IPCC 2007d, pp. 35–54, 82–85.) Results of scientific analyses presented by the IPCC show that most of the observed increase in global average temperature since the mid-20th century cannot be explained by natural variability in climate, and is “very likely” (defined by the IPCC as 90 percent or higher

probability) due to the observed increase in greenhouse gas (GHG) concentrations in the atmosphere as a result of human activities, particularly carbon dioxide emissions from use of fossil fuels (IPCC 2007a, pp. 5–6 and figures SPM.3 and SPM.4; IPCC 2007d, pp. 21–35). Further confirmation of the role of GHGs comes from analyses by Huber and Knutti (2011, p. 4), who concluded that it is extremely likely that approximately 75 percent of global warming since 1950 has been caused by human activities.

Scientists use a variety of climate models, which include consideration of natural processes and variability, as well as various scenarios of potential levels and timing of GHG emissions, to evaluate the causes of changes already observed and to project future changes in temperature and other climate conditions (e.g., IPCC 2007c, entire; Ganguly *et al.* 2009, pp. 11555, 15558; Prinn *et al.* 2011, pp. 527, 529). All combinations of models and emissions scenarios yield very similar projections of increases in the most common measure of climate change, average global surface temperature (commonly known as global warming), until about 2030. Although projections of the extent and rate of warming differ after about 2030, the overall trajectory of all the projections is one of increased global warming through the end of this century, even for the projections based on scenarios that assume that GHG emissions will stabilize or decline. Thus, there is strong scientific support for projections that warming will continue through the 21st century, and that the scope and rate of change will be influenced substantially by the extent of GHG emissions (IPCC 2007a, pp. 44–45; IPCC 2007c, pp. 760–764 and 797–811; Ganguly *et al.* 2009, pp. 15555–15558; Prinn *et al.* 2011, pp. 527, 529). (See IPCC 2007b, p. 8, for a summary of other global projections of climate-related changes, such as

frequency of heat waves and changes in precipitation. Also see IPCC 2011(entire) for a summary of observations and projections of extreme climate events.)

Various changes in climate may have direct or indirect effects on species. These effects may be positive, neutral, or negative, and they may change over time, depending on the species and other relevant considerations, such as interactions of climate with other variables (e.g., habitat fragmentation) (IPCC 2007e, pp. 214–246). Identifying likely effects often involves aspects of climate change vulnerability analysis.

Vulnerability refers to the degree to which a species (or system) is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the type, scope, and rate of climate change and variation to which a species is exposed, its sensitivity, and its adaptive capacity (IPCC 2007a, p. 89; see also Glick *et al.* 2011, pp. 19–22). No single method for conducting such analyses applies to all situations (Glick *et al.* 2011, p. 3). We use our expert judgment and appropriate analytical approaches to weigh relevant information, including uncertainty, in our consideration of various aspects of climate change.

As is the case with all threats that we assess, even if we conclude that a species is currently affected or is likely to be affected in a negative way by one or more climate-related impacts, it does not necessarily follow that the species meets the definition of an “endangered species” or a “threatened species” under the Act. If a species is listed as endangered or threatened, knowledge regarding the vulnerability of the species to, and

known or anticipated impacts from, climate-associated changes in environmental conditions can be used to help devise appropriate strategies for its recovery.

Global climate projections are informative, and, in some cases, the only or the best scientific information available for us to use. However, projected changes in climate and related impacts can vary substantially across and within different regions of the world (e.g., IPCC 2007a, pp. 8–12). Therefore, we use “downscaled” projections when they are available and have been developed through appropriate scientific procedures, because such projections provide higher resolution information that is more relevant to spatial scales used for analyses of a given species (see Glick *et al.* 2011, pp. 58–61, for a discussion of downscaling). With regard to our analysis for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher, downscaled projections are available.

Downscaled climate change projections for the Puget Sound trough ecoregion, where the four Thurston/Pierce subspecies of the *Mazama* pocket gopher are found, predict consistently increasing annual mean temperatures from 2012 to 2095 using the IPCC’s medium (A1B) emissions scenario (IPCC 2000, p. 245). Using the General Circulation Model (GCM) that most accurately predicts precipitation for the Pacific Northwest, the Third Generation Coupled Global Climate Model (CGCM3.1) under the medium emissions scenario (A1B), annual mean temperature is predicted to increase approximately 1.8 °Fahrenheit (F) (1 °Celsius (C)) by the year 2020, 3.6 °F (2 °C) by 2050, and 5.4 °F (3 °C) by 2090 (Climatewizardcustom 2012). This analysis was restricted to the ecoregion encompassing the overlapping range of the subspecies of

interest and is well supported by analyses focused only on the Pacific Northwest by Mote and Salathé in their 2010 publication, *Future Climate in the Pacific Northwest* (Mote and Salathé 2010, entire). Employing the same GCM and medium emissions scenario, downscaled model runs for precipitation in the ecoregion project a small (less than 5 percent) increase in mean annual precipitation over approximately the next 80 years. Most months are projected to show an increase in mean annual precipitation. May through August are projected to show a decrease in mean annual precipitation, which corresponds with the majority of the reproductive season for the Mazama pocket gopher (Climatewizardcustom 2012).

The potential impacts of a changing global climate to the Mazama pocket gopher are presently unclear. Projections localized to the Georgia Basin–Puget Sound Trough–Willamette Valley Ecoregion suggest that temperatures are likely to increase approximately 5 °F (2.8 °C) at the north end of the region by the year 2080 based on an average of greenhouse gas emission scenarios B1, A1B, and A2 and all Global Circulation Models employed by Climatewizard (range = 2.6 °F to 7.6 °F; 1.4 °C to 4.2 °C). Similarly, the mid-region projection predicts an increase on average of 4.5 °F (range = 2.1 °F to 7.1 °F; average of 2.5 °C with a range of 1.2 °C to 3.9 °C) and the southern end to increase by 4.5 °F (range = 2.2 °F to 7.1 °F; average of 2.5 °C with a range of 1.2 °C to 3.9 °C). Worldwide, the IPCC states that it is very likely that extreme high temperatures, heat waves, and heavy precipitation events will increase in frequency (IPCC 2007c, p. 783).

Climate change has been linked to a number of conservation issues and changes in animal populations and ranges. However, direct evidence that climate change is the cause of these alterations is often lacking (McCarty 2001, p. 327). The body of work examining the response of small mammals to climate change is small and is primarily focused on reconstruction of mammalian communities through the comparison of small mammal fossils from the late Pleistocene to those of the Holocene, a time period that spans the last significant climate warming event that took place between 15,000 and 11,000 years ago (Blois *et al.* 2010, entire; Terry *et al.* 2011, entire). Paleontological work done by Blois *et al.* (2010, p. 772) in northern California reveals a strong correlation between climate change and the decline and extirpation of small mammal species during the last major global warming event. The loss in species richness (number of taxa) of small mammals at their research site is equal to that documented for large mammal extinctions in North America during the same warming event at the transition from the Pleistocene to the Holocene: 32 percent (Blois *et al.* 2010, p. 772). Blois *et al.* (2010, supplemental data, p. 9) determined that *Thomomys mazama* were more vulnerable to climate change than other *Thomomys* species in the area due to the steep decline of *T. mazama* population numbers that coincided with the first significant warming event around 15,000 years ago and their extirpation from the site around 6,000 years ago.

To explore the potential impacts of climate change within the Anthropocene (the current geologic epoch), Blois (2009, p. 243) constructed a climate niche (the estimated tolerance of environmental variables for a given species) for *Thomomys mazama*

reflecting the average minimum and average maximum temperatures range wide. Blois used climate data compiled by PRISM Group, Oregon State University, for the years 1971–2000, to construct the climate niche. Temperatures given are mean annual temperatures based on mean monthly averages. The climate niche Blois constructed for the Mazama pocket gopher gives 22.3 °F (-5.4 °C) for the lowest of the mean annual minimum temperatures across all localities and 66.9 °F (19.4 °C) for the highest of the mean annual maximum temperatures across all localities where Mazama pocket gophers are found. Minimum and maximum temperatures above the surface of the soil are attenuated with increased soil depth. Whether or not Mazama pocket gophers are able to regulate the temperature in their burrow system by digging deeper in the soil is unknown; however, it is likely that any temperature changes experienced by pocket gophers underground are attenuated relative to observed changes in surface temperatures.

The effects of climate change may be buffered by pocket gophers' fossorial lifestyle and are likely to be restricted to indirect effects in the form of changes in vegetation structure and subsequent habitat shifts through plant invasion and encroachment (Blois 2009, p. 217). Further, the impacts of climate change on western Washington are projected to be less severe than in other parts of the country. While overall annual average precipitation in western Washington is predicted to increase, seasonal precipitation is projected to become increasingly variable, with wetter and warmer winters and springs and drier, hotter summers (Mote and Salathé 2010, p. 34; Climatewizard 2012). These shifts in temperature, precipitation, and soil moisture may result in changes in the vegetation structure through woody plant invasion and

encroachment and thus affect the habitat for all pocket gopher species and subspecies in the region. Despite this potential for future environmental changes, we have not identified nor are we aware of any data on an appropriate scale to evaluate habitat or populations trends for the four Thurston/Pierce subspecies of the Mazama pocket gopher or to make predictions about future trends and whether the subspecies will be significantly impacted by climate change.

Stochastic Weather Events

Stochasticity of extreme weather events may impact the ability of threatened and endangered species to survive. Vulnerability to weather events can be described as being composed of three elements: exposure, sensitivity, and adaptive capacity.

The small, isolated nature of the remaining populations of the four Thurston/Pierce subspecies of the Mazama pocket gopher increases the subspecies' vulnerability to stochastic natural events. When species are limited to small, isolated habitats, they are more likely to become extinct due to a local event that negatively affects the population. While a population's small, isolated nature does not represent an independent threat to the species, it does substantially increase the risk of extirpation from the effects of all other threats, including those addressed in this analysis, and those that could occur in the future from unknown sources.

The impact of stochastic weather and extreme weather events on pocket gophers is difficult to predict. Pocket gophers may largely be buffered from these impacts due to their fossorial lifestyle, but Case and Jasch (1994, p. B-21) connect sharp population declines of pocket gophers of several genera with stochastic weather events such as heavy snow cover and rapid snowmelt with a corresponding rise in the water table. Based on our review, we found no information to indicate that the effects of stochastic weather events are a threat to any of the four Thurston/Pierce subspecies of the Mazama pocket gopher.

Pesticides and Herbicides

The Mazama pocket gopher is not known to be impacted by pesticides or herbicides directly, but may be affected by the equipment used to dispense them. These impacts are covered under Factor A.

Control as a Pest Species

Pocket gophers are often considered a pest because they sometimes damage crops and seedling trees, and their mounds can create a nuisance. Several site locations in the WDFW wildlife survey database were found as a result of kill-trapping on Christmas tree farms, a nursery, and in a livestock pasture (WDFW 2001). For instance, the type locality for the Cathlamet pocket gopher is on a commercial tree farm. Mazama pocket

gophers in Thurston County were also used in a rodenticide experiment as recently as 1995 (Witmer *et al.* 1996, p. 97).

In Washington it is currently illegal to trap or poison pocket gophers or trap or poison moles where they overlap with Mazama pocket gopher populations, but not all property owners are cognizant of these laws, nor are most citizens capable of differentiating between mole and pocket gopher soil disturbance. In light of this, it is reasonable to believe that mole trapping or poisoning efforts still have the potential to adversely affect pocket gopher populations. Local populations of Mazama pocket gophers that survive commercial and residential development (adjacent to and within habitat) may be subsequently extirpated by trapping or poisoning by humans. Lethal control by trapping or poisoning is most likely to be a threat to the four Thurston/Pierce subspecies where their ranges overlap with residential properties.

Recreation

The Mazama pocket gopher is not known to be directly negatively impacted by recreation activities, although predation by domestic dogs associated with recreational activities does occur (Clause 2012, pers. comm.). These impacts are covered under Predation in Factor C.

Summary of Factor E

Based upon our review of the best commercial and scientific data available, the loss, degradation, and fragmentation of prairies has resulted in smaller local population sizes, potential loss of genetic diversity, reduced gene flow among populations, destruction of population structure, and increased susceptibility to local population extirpation for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher from a series of threats including poisoning and trapping, as summarized below.

Small population sizes coupled with disjunct and fragmented habitat may contribute to further population declines for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher, which occur in habitats that face continuing fragmentation due to development and land conversion.

Mole trapping or poisoning efforts have the potential to adversely affect the four Thurston/Pierce subspecies of the *Mazama* pocket gopher, especially where they abut commercial and residential areas. Such efforts may have a particularly negative impact on the populations that are already small and isolated.

Due to small population effects caused by fragmentation of habitat, and impacts from trapping and poisoning efforts, we find that the threats associated with other natural or manmade factors are significant for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher, when considered in conjunction with the other factors considered here.

Determination

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for adding species to the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, we may list a species based on (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) Overutilization for commercial, recreational, scientific, or educational purposes; (C) Disease or predation; (D) The inadequacy of existing regulatory mechanisms; or (E) Other natural or manmade factors affecting its continued existence. Listing actions may be warranted based on any of the above threat factors, singly or in combination.

The Act defines an endangered species as any species that is “in danger of extinction throughout all or a significant portion of its range” and a threatened species as any species “that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.” We have carefully assessed the best scientific and commercial data available regarding the past, present, and future threats to the four Thurston/Pierce subspecies of the *Mazama* pocket gopher. The *Mazama* pocket gophers of Washington State are hypothesized to have initially dispersed into and later fully occupied the glacial outwash aprons after the last glaciation period (Dalquest and Scheffer 1942, pp. 95–96), which would have later become the open prairies and grasslands of the south Puget Sound. In the south Puget Sound region, where most of western Washington’s prairies historically occurred, and where the four Thurston/Pierce

subspecies occur, less than 10 percent of the original prairie persists (Crawford and Hall 1997, pp. 13–14). Each of these four subspecies has varying degrees of impacts acting on them.

We find that both development and fire suppression have caused the loss of a majority of prairie habitats or made such habitat unavailable to the four Thurston/Pierce subspecies of the Mazama pocket gopher due to conversion of land to incompatible uses (e.g., residential and commercial development) and the encroachment of native and nonnative species of woody plants. These significant impacts are expected to continue into the foreseeable future. Impacts from military training, affecting large expanses of areas occupied by the Roy Prairie and Yelm pocket gopher on JBLM, are expected to increase under the DOD's Grow the Army initiative, although JBLM's Mazama pocket gopher ESMP provides an overall conservation benefit to the subspecies. Predation of gophers by feral and domestic cats and dogs has occurred and is expected to increase with increased residential development on prairie soils occupied by gophers, and to continue to occur where people recreate with their dogs in areas occupied by Mazama pocket gophers. Increased predation pressure is of particular concern for the Olympia and Yelm pocket gophers, while the majority of the Roy Prairie pocket gopher populations are buffered from increasing development by their location on JBLM, and the Tenino pocket gopher is currently isolated from residential development due to the location of their only known population.

We find that the threat of development and adverse impacts to habitat from conversion to other uses, the loss of historically occupied locations resulting in the present isolation and limited distribution of the subspecies, the impacts of military training, existing and likely future habitat fragmentation, land use changes, long-term fire suppression, and the threats associated with the present and threatened destruction, modification, and curtailment of the four Thurston/Pierce subspecies' habitat is significant. We conclude that there are likely to be significant, ongoing threats to the four Thurston/Pierce subspecies of the Mazama pocket gopher due to factors such as small population effects (risk of population loss due to catastrophic or stochastic events), predation, poisoning, and trapping. The small size of most of the remaining local populations, coupled with disjunct and fragmented habitat, may render them increasingly vulnerable to additional threats such as those mentioned above.

The four Thurston/Pierce subspecies face a combination of several high-magnitude threats; the threats are immediate; these subspecies are highly restricted in their ranges; the threats occur throughout the subspecies' ranges and are not restricted to any particular significant portion of those ranges. Therefore, we assessed the status of each of these subspecies throughout their entire ranges, and our assessment and proposed determination will apply to each of these subspecies throughout their entire ranges.

Therefore, for the reasons provided in this rule, on the basis of the best available scientific and commercial information, we are listing the four Thurston/Pierce subspecies of the Mazama pocket gopher (*Thomomys mazama pugetensis*, *glacialis*, *tumuli*, and

yelmensis—the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers, respectively) as threatened throughout their ranges in accordance with sections 3(20) and 4(a)(1) of the Act.

Under the Act and our implementing regulations, a species may warrant listing if it is endangered or threatened throughout all or a significant portion of its range. The Act defines an endangered species as any species that is “in danger of extinction throughout all or a significant portion of its range” and a threatened species as any species “that is likely to become endangered throughout all or a significant portion of its range within the foreseeable future.” We find that the four Thurston/Pierce subspecies (*Thomomys mazama pugetensis*, *glacialis*, *tumuli*, and *yelmensis*) are likely to become endangered species throughout all or a significant portion of their ranges within the foreseeable future, based on the immediacy, severity, and scope of the threats described above. We do not, however, have information to suggest that the present threats are of such great magnitude that any of these four subspecies are in immediate danger of extinction (that is, they do not meet the definition of an endangered species). Rather, we conclude that they are likely to become so in the foreseeable future (which is the definition of a threatened species). Therefore, on the basis of the best available scientific and commercial data, we determine that *T. m. pugetensis*, *glacialis*, *tumuli*, and *yelmensis* meet the definition of threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

The threats to the survival of the four Thurston/Pierce subspecies of the Mazama pocket gopher occur throughout the range of each subspecies and are not restricted to any particular significant portion of that range. Accordingly, our assessment and determination applies to each subspecies—the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers—throughout its entire range.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness, and conservation by Federal, Tribal, State, and local agencies, private organizations, and individuals. The Act encourages cooperation with the States and requires that recovery actions be carried out for all listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Subsection 4(f) of the Act requires the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to

halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Recovery planning includes the development of a recovery outline shortly after a species is listed and preparation of a draft and final recovery plan. The recovery outline guides the immediate implementation of urgent recovery actions and describes the process to be used to develop a recovery plan. Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species remains endangered or may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks. Recovery teams (composed of species experts, Federal and State agencies, nongovernmental organizations, and stakeholders) are often established to develop recovery plans. When completed, the recovery outline, draft recovery plan, and the final recovery plan will be available on our website at <http://www.fws.gov/endangered>, or at <http://www.fws.gov/wafwo/mpg.html> (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, Tribes, States, nongovernmental

organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (e.g., restoration of native vegetation), research, permanent habitat protection, and outreach and education. The recovery of many listed species often cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on Tribal, State, and private lands.

When this listing becomes effective, funding for recovery actions will be available from a variety of sources, including Federal budgets, State programs, and cost-share grants for non-Federal landowners, the academic community, and nongovernmental organizations. In addition, pursuant to section 6 of the Act, the State of Washington will be eligible for Federal funds to implement management actions that promote the protection or recovery of the four Thurston/Pierce subspecies of the Mazama pocket gopher. Information on our grant programs that are available to aid species recovery can be found at: <http://www.fws.gov/grants>.

Please let us know if you are interested in participating in recovery efforts for the four Thurston/Pierce subspecies of the Mazama pocket gopher. Additionally, we invite you to submit any new information on these subspecies whenever it becomes available and any information you may have for recovery planning purposes (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) of the Act requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as an endangered or threatened species and with respect to its critical habitat, if any is designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402.

Section 7(a)(4) of the Act requires Federal agencies to confer with the Service on any action that is likely to jeopardize the continued existence of a species proposed for listing or result in destruction or adverse modification of proposed critical habitat. If a species is listed subsequently, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species or destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into consultation with the Service.

Federal agency actions within the species' habitat that may require conference or consultation or both as described in the preceding paragraph include management and any other landscape-altering activities on Federal lands administered by any Federal agency. These activities include any actions to manage or restore critical habitat, actions that require collecting or handling the species for the purpose of captive propagation and translocation to new habitat, actions that may negatively affect the subspecies through removal, conversion, or degradation of habitat. Examples of activities conducted, regulated or funded by Federal agencies that may affect the four Thurston/Pierce subspecies of the *Mazama* pocket gopher or their habitat include, but are not limited to:

(1) Military training activities and operations conducted in or adjacent to occupied or suitable habitat;

(2) Activities with a Federal nexus that include vegetation management such as burning, mechanical treatment, and/or application of herbicides/pesticides on Federal, State, or private lands;

(3) Ground-disturbing activities regulated, funded, or conducted by Federal agencies in or adjacent to occupied and/or suitable habitat; and

(4) Import, export, or trade of the subspecies.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to endangered and threatened wildlife. The prohibitions of section 9(a)(1) of the Act, codified at 50 CFR 17.21, make it illegal for any person subject to the jurisdiction of the United States to take (which includes harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect; or to attempt any of these) endangered wildlife within the United States or on the high seas. In addition, it is unlawful to import; export; deliver, receive, carry, transport, or ship in interstate or foreign commerce in the course of commercial activity; or sell or offer for sale in interstate or foreign commerce any listed species. It is also illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions apply to employees of the Service, the National Marine Fisheries Service, other Federal land management agencies, and State conservation agencies.

We may issue permits to carry out otherwise prohibited activities involving endangered wildlife under certain circumstances. Regulations governing permits are codified at 50 CFR 17.22. With regard to endangered wildlife, a permit may be issued for the following purposes: for scientific purposes, to enhance the propagation or survival of the species, and for incidental take in connection with otherwise lawful activities. There are also certain statutory exemptions from the prohibitions, which are found in sections 9 and 10 of the Act.

It is our policy, as published in the **Federal Register** on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a listing on proposed and ongoing activities within the range of listed species. The following activities could potentially result in a violation of section 9 of the Act; this list is not comprehensive:

(1) Introduction of species that compete with or prey upon the Mazama pocket gopher, or its habitat, such as the introduction of competing, invasive plants or animals;

(2) Unauthorized modification of the soil profiles or the forage habitat on sites known to be occupied by any of the four Thurston/Pierce subspecies of the Mazama pocket gopher;

(3) Unauthorized utilization of trapping or poisoning techniques in areas occupied by any of the four Thurston/Pierce subspecies of the Mazama pocket gopher; and

(4) Intentional harassment or removal of any of the four Thurston/Pierce subspecies of the Mazama pocket gopher.

Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Washington Fish and Wildlife Office (see **FOR FURTHER INFORMATION CONTACT**). Requests for copies of the regulations concerning listed animals and general inquiries regarding prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Ecological Services, Eastside Federal Complex, 911 N.E. 11th Avenue, Portland, OR 97232-4181 (telephone 503-231-6158; facsimile 503-231-6243).

When the listing of the four Thurston/Pierce subspecies of the Mazama pocket gopher under the Act becomes effective, the State of Washington may enter into agreements with Federal agencies to administer and manage any area required for the conservation, management, enhancement, or protection of endangered species. Funds for these activities could be made available under section 6 of the Act (Cooperation with the States) or through competitive application to receive funding through our Recovery Program under section 4 of the Act. Thus, the Federal protection afforded to the subspecies by listing them as threatened species will be reinforced and supplemented by protection under State law.

Special Rule

Under section 4(d) of the Act, the Secretary may publish a special rule that modifies the standard protections for threatened species in the Service's regulations at 50 CFR 17.31, which implement section 9 of the Act, with special measures that are determined to be necessary and advisable to provide for the conservation of the species. As a means to promote conservation efforts on behalf of the four Thurston/Pierce subspecies of the Mazama pocket gopher, we are promulgating a special rule for these subspecies under section 4(d) of the Act. As a means to promote conservation efforts by encouraging activities that inadvertently create needed habitat for the four Thurston/Pierce subspecies of the Mazama pocket gopher, we are issuing this special rule for these subspecies under section 4(d) of the Act. Under this special rule, all prohibitions and provisions of 50 CFR 17.31 apply to the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers, except for the activities described here. These activities are specifically exempted from the take prohibitions of section 9 of the Act, because we have determined it necessary and advisable for the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher for the reasons outlined below.

Under the special rule, take of these subspecies caused by certain airport management actions on civilian airports; certain common practices by agricultural operations on State, county, private, or Tribal lands; certain ongoing single-family residential non-commercial activities; noxious weed and invasive plant control conducted

on non-Federal lands; and certain vegetation management actions and fencing of roadside rights-of-way on highways and roads by Federal, State, county, private, or Tribal entities would be exempt from section 9 of the Act. Activities on Federal lands or with any Federal agency involvement will still need to be addressed through consultation under section 7 of the Act. Although we are exempting these activities from section 9 of the Act, we strongly encourage landowners and managers to use best management practices when they conduct actions that may negatively impact the four Thurston/Pierce subspecies of the Mazama pocket gopher, and to avoid impacts to these subspecies to the maximum extent practicable. Although this special 4(d) rule exempts any “take” (e.g., harass, harm, wound, kill) associated with conducting the activities described below, as a recommended conservation measure we encourage landowners to avoid soil-disturbing activities in areas of known or suspected active pocket gopher activity to minimize such take. Avoidance may include operating around such areas of activity or delaying the ground-disturbing activity at a site until pocket gopher activity appears to have ceased.

Routine Maintenance Activities and Wildlife Hazard Management at Civilian Airports. Some management actions taken at civilian airports are generally beneficial to Mazama pocket gophers. Mazama pocket gophers maintain populations at airports in the south Puget Sound (i.e., Olympia Airport and Shelton Airport). Airports routinely implement programs to minimize the presence of hazardous wildlife on airfields, and these activities unintentionally create suitable habitat for Mazama pocket gophers. While some airport management activities like discing or grading can result in individuals being injured or killed, large areas of airport lands are kept free of shrubs and trees that would

otherwise overtake occupied gopher habitat and render it unsuitable for use by gophers. These same areas are largely fenced, which restricts access to airport lands by coyotes, a major predator of Mazama pocket gophers. While the airports are in operation, safety measures require that airport-maintained lands themselves (areas adjacent to runways, taxiways, etc.) remain open and undeveloped.

Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species; however, because the Olympia Airport provides important habitat for the Olympia subspecies of the Mazama pocket gopher, and the subspecies has persisted there under current management, we are exempting certain routine airport management activities at civilian airports. The special rule for airport management acknowledges the benefits to pocket gophers from these activities; covered actions would include vegetation management to maintain desired grass height on or adjacent to airports through mowing, discing, herbicide use, or burning; hazing of hazardous wildlife (geese and other large birds and mammals); routine management, repair and maintenance of runways, roads, taxiways, and aprons; and management of forage, water, and shelter to be less attractive to these hazardous wildlife, as described under the Regulation Promulgation section, below. Many of the activities that benefit the Mazama pocket gopher on civilian airports such as the Olympia Airport are a result of practices to maintain safe conditions for aviation; we recommend that airport operators follow the guidance provided in Federal Aviation Administration advisory circular 150/5200-33C Hazardous Wildlife Attractants on or Near Airports (FAA 2007, entire), and all other applicable related guidance.

In response to public comments received on the proposed rule, we have revised the 4(d) special rule for the four Thurston/Pierce subspecies of the Mazama pocket gopher. Based on feedback from the FAA and Port of Olympia (Olympia Airport), we have amended the list of covered activities to address specific airport management practices that may affect the Mazama pocket gopher by deleting restrictions on use of heavy equipment from the 4(d) special rule and adding other allowable activities (i.e., hazing of hazardous wildlife, management of forage, water, and shelter to deter hazardous wildlife, use of additional methods to control noxious weeds and invasive plants). See also **Summary of Changes from the Proposed Rule** section of this document.

We believe that a 4(d) special rule for specific activities on civilian airports is necessary and advisable to provide for the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher. We therefore exempt take of the Olympia gopher resulting from routine management activities and wildlife hazard management activities on civilian airports, which are specified below in the **Regulation Promulgation** section, under section 9 of the Act.

Agricultural Activities. Agricultural lands provide important habitats for the four Thurston/Pierce subspecies of the Mazama pocket gopher. This is particularly true for the Olympia, Tenino, and Yelm pocket gophers, in Thurston County, as the majority of known locations of the Roy Prairie pocket gopher occur on JBLM. While there are sites

occupied by the Roy Prairie pocket gopher in and around the City of Roy, the known occurrences are extremely limited off the base. Examples of farmed areas that are occupied by Mazama pocket gophers and provide suitable habitat include livestock ranches, pastures, seed nurseries, market crop farms, and open rural areas where vegetation is maintained in an early seral condition. Agricultural lands in Thurston County account for a portion of the total area that the Service believes may be occupied or could be occupied by Mazama pocket gophers, approximately 15,370 ac (6,220 ha) of approximately 180,000 ac (72,843 ha) of suitable soils. While some farming activities like tilling or disking can result in individuals being injured or killed, if individual Mazama pocket gophers remain unharmed in adjacent undisturbed areas, they may readily recolonize the disturbed areas and continue to persist in areas that are farmed, grazed, and used for agricultural production, thereby providing a net conservation benefit.

Lands that are currently occupied by Mazama pocket gophers and that have been subject to repeated years of previous tilling are likely capable of sustaining continued tilling without significant impact to the population, assuming practices remain consistent, and surrounding lands are also managed as they have been in the past. Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species; however, because agricultural areas provide important habitats for the four Thurston/Pierce subspecies of the Mazama pocket gopher, we are exempting normal agricultural activities, including: grazing; stock water facility installation and maintenance; routine installation and maintenance of fencing; planting, harvest, fertilization, etc., of crops; maintenance of corrals, sheds, and other outbuildings;

maintenance of existing roads; placement of animal, plant, or soil supplements; noxious weed and invasive plant management; and occasional deep tillage. Although among all of these activities, deep tillage has the highest likelihood of inadvertently killing gophers, the potential scope of impact this activity may incur is limited by virtue of its application only to a subset of agricultural lands and its intermittent use within a year or between years.

The Service recognizes that in the long term, it is a benefit to the four Thurston/Pierce subspecies of the *Mazama* pocket gopher to maintain those aspects of the agricultural landscape that can aid in the recovery of the species. We believe this special rule will further conservation of these subspecies by discouraging conversions of the agricultural landscape into habitats unsuitable for the four Thurston/Pierce subspecies of the *Mazama* pocket gopher and encouraging landowners to continue managing the remaining landscape in ways that meet the needs of their operation and provide suitable habitat for these subspecies.

In addition, we believe that, in certain instances, easing the general take prohibitions on non-Federal agricultural lands may encourage continued responsible land uses that provide an overall benefit to the subspecies. We also believe that such a special rule will promote the conservation efforts and private lands partnerships critical for species recovery (Bean and Wilcove 1997, pp. 1–2). However, in easing the take prohibitions under section 9, the measures developed in the special rule must also contain prohibitions necessary and appropriate to conserve the species.

As discussed elsewhere in this rule, Mazama pocket gophers face many threats. Foremost among these is the loss of suitable vegetative habitat on suitable soils. With the loss of these natural habitats during the last century, alternative breeding, foraging, and dispersal sites, including active agricultural lands, have become critical for the continued survival and recovery of the four Thurston/Pierce subspecies of the Mazama pocket gopher. The unique challenge for conservation of these subspecies on agricultural lands will be to find a way to work with private landowners to voluntarily create habitat for these subspecies rather than allow the habitats on their lands to become unsuitable through inaction. Section 9 of the Act prohibits a range of actions that would take a listed species, including actions that destroy habitats essential to individuals of the species. However, section 9 of the Act does not prohibit inaction; thus, a landowner's failure to disturb habitat on a regular basis to maintain the vegetation structure needed by Mazama pocket gophers would not be a violation of section 9 of the Act. If recovery of the four Thurston/Pierce subspecies of the Mazama pocket gopher requires the availability of agricultural lands, and we believe it does, then we need to give landowners reasons and incentives to manage their lands in ways that allow gophers to thrive on those lands.

While it appears that Mazama pocket gophers may be benefiting from agricultural practices, much remains to be learned about the effects of agricultural activities on these subspecies. We have concluded that developing a conservation partnership with the agricultural community will allow us to answer important questions about the impact of various agricultural practices, and will provide valuable information to assist in the

recovery of the subspecies. We further believe that, where consistent with the discretion provided by the Act, implementing policies that promote such partnerships is an essential component for the recovery of listed species, particularly where species occur on private lands. Conservation partnerships can provide positive incentives to private landowners to voluntarily conserve natural resources, and can remove or reduce disincentives to conservation (Knight 1999, p. 224; Brook *et al.* 2003, p. 1644; Sorice *et al.* 2011, p. 594). The Service will work closely with the farming community to develop ways to monitor impacts on Mazama pocket gophers from routine agricultural activities. We conclude that this commitment is necessary and appropriate, and will provide further insights into land stewardship practices that foster the continued use of farm land in ways beneficial to both Mazama pocket gophers and the agricultural community.

In response to public comments received on the proposed rule, we have revised the 4(d) special rule for the four Thurston/Pierce subspecies of the Mazama pocket gopher. Based on feedback from NRCS and agricultural interests, we deleted several activities or related descriptions from the 4(d) special rule (i.e., restrictions on types of fencing, timing restrictions on ground-disturbing activities, and discing of fencelines for fire control) and added other allowed activities (i.e., maintenance of troughs, tanks, pipelines, and watering systems, fertilization, harrowing, tilling of less than or equal to a 12-in (30.5-cm) depth, placement of plant nutrients and soil amendments, use of discing, fungicides, and fumigation to control noxious weeds and invasive plants, and deep tillage not to exceed once every 10 years). See also the **Summary of Changes from the Proposed Rule** section of this document.

We believe that a 4(d) special rule for activities on agricultural lands is necessary and advisable to provide for the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher. We therefore exempt take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers resulting from normal agricultural activities, which are specified below in the **Regulation Promulgation** section, under section 9 of the Act.

Single-family Residential Landowner Non-commercial Activities. The four Thurston/Pierce subspecies of the Mazama pocket gopher occur on private lands throughout their ranges in Thurston and Pierce Counties in Washington. Activities by single-family residential landowners in these areas have the potential to harm or kill pocket gophers. Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species; however, the Service recognizes that routine maintenance and some small construction activities, even those with the potential to inadvertently take individual Mazama pocket gophers, may on the whole, provide a conservation benefit to the subspecies, especially on properties larger than 1 acre (0.40 ha). The Service recognizes that in the long term, it is a benefit to the four Thurston/Pierce subspecies of the Mazama pocket gopher to maintain their distribution across private and public lands to aid in their recovery. We believe this special rule will further conservation of the subspecies by discouraging conversions of the landscape into habitats unsuitable for the four Thurston/Pierce subspecies of the Mazama pocket gopher and encouraging landowners to continue managing the remaining landscape in ways that meet their needs and provide suitable habitat for these four subspecies. Under the rule,

covered actions would include noxious weed and invasive plant management through mowing or herbicide use or other methods, and the construction and placement of fencing, garden plots, play equipment, dog kennels, storage sheds, and carports.

This special rule, which exempts the non-commercial, single-family residential activities listed above, and which may otherwise result in take under section 9 of the Act, reduces the incentive for small landowners to eliminate populations of Mazama pocket gopher from their lands. In addition, we believe that in certain instances, easing the general take prohibitions on non-Federal small landowner lands may encourage continued responsible land uses that provide an overall benefit to the subspecies. We also believe that such a special rule will promote the conservation efforts and private lands partnerships critical for species recovery (Bean and Wilcove 1997, pp. 1-2). Conservation partnerships can provide positive incentives to private landowners to voluntarily conserve natural resources, and can remove or reduce disincentives to conservation (Knight 1999, p. 224; Brook *et al.* 2003, p. 1644; Sorice *et al.* 2011, p. 594). The Service will work closely with Thurston County and private landowners to develop ways to monitor impacts on Mazama pocket gophers from routine non-commercial activities. We conclude that this commitment is necessary and appropriate, and will provide further insights into land stewardship practices that foster the continued use of private lands in ways beneficial to both Mazama pocket gophers and the community.

In response to public comments received on the proposed rule, we have revised the 4(d) special rule for the four Thurston/Pierce subspecies of the Mazama pocket

gopher. Based on feedback from Thurston County and private landowners, we deleted two restrictions on activities from the 4(d) special rule (i.e., restrictions on types of fencing and play equipment) and added allowed activities (i.e., use of fungicide or fumigation to control noxious and invasive plants). Please see the **Summary of Changes from the Proposed Rule** section of this document for a complete list of changes to the 4(d) special rule between the proposed and final rule stages.

We believe that a 4(d) rule for single-family residential landowner non-commercial activities is necessary and advisable to provide for the conservation of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher. We therefore exempt take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers resulting from ongoing non-commercial activities on small landowner properties, which are specified below in the **Regulation Promulgation** section, under section 9 of the Act.

Noxious Weed and Invasive Plant Control on Non-Federal Lands. Based on public comments, we are adding noxious weed and invasive plant control activities on non-Federal lands to the list of activities in the 4(d) special rule that are exempt from take under section 9 of the Act.

The four Thurston/Pierce subspecies of the *Mazama* pocket gopher breed and forage in areas of short-statured vegetation. These areas include, but are not limited to, native and managed prairies, fallow and active agricultural fields and pastures, and some crop fields. As mentioned under Factor A, the suppression and loss of ecological

disturbance regimes, such as fire, across vast portions of the landscape have resulted in altered vegetation structure in these areas. This has facilitated invasion by woody vegetation, rendering habitat unsuitable for the four Thurston/Pierce subspecies of the Mazama pocket gopher.

Habitat management to maintain short-statured vegetation is essential to maintaining suitable breeding, wintering, and foraging habitat for Mazama pocket gophers. Although Mazama pocket gophers are known to eat weedy forbs and grasses, and while use of certain equipment can destroy burrows, nests and young, as well as removing above-ground forage plants, removal of noxious weeds wherever they may occur will help to maintain the short-statured vegetation required by Mazama pocket gophers. Targeted plants include those on County, State, and Federal noxious weed lists (see State and Federal lists via links at <http://plants.usda.gov/java/noxiousDriver>; Washington State counties each have a noxious weed control website). By their nature, noxious weeds and invasive plants grow aggressively and multiply quickly, negatively affecting all types of habitats, including those used by Mazama pocket gophers. Some species of noxious weeds spread across long distances through wind, water, and animals, as well as via humans and vehicles, thereby affecting habitats far away from the source plants.

Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species; however, the Service recognizes that removal of noxious weeds and control of invasive plants, even those with the potential to inadvertently take

individual Mazama pocket gophers, is necessary and may in part provide for the long-term conservation needs of the Mazama pocket gopher. The Service recognizes that in the long term, it is a benefit to the Mazama pocket gopher to remove noxious weeds wherever they may occur.

We believe that a 4(d) rule for control of noxious weeds and invasive plants is necessary and advisable to further the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher by helping to prevent spread of those noxious weeds and invasive plants that may render habitat unsuitable for the Mazama pocket gopher, and by encouraging landowners to manage their lands in ways that meet their property management needs as well as helping to prevent degradation or loss of suitable habitat for the Mazama pocket gopher. We therefore exempt take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers under section 9 of the Act resulting from routine removal or other management of noxious weeds and invasive plants, as described under the **Regulation Promulgation** section, under section 9 of the Act.

Roadside Right-of-Way Maintenance Activities on Federal and Non-Federal Lands. Based on comments from Federal, State, and County officials, we are adding roadside rights-of-way activities on Federal and non-Federal highways and roads to the list of activities in the 4(d) special rule that are exempt from take under section 9 of the Act.

As described above, the four Thurston/Pierce subspecies of the Mazama pocket gopher breed and forage in areas of short-statured vegetation. The suppression and loss of ecological disturbance regimes, such as fire, across vast portions of the landscape have resulted in altered vegetation structure in these areas. This has facilitated encroachment by woody vegetation, rendering habitat unsuitable for the four Thurston/Pierce subspecies of the Mazama pocket gopher.

Habitat management to maintain short-statured vegetation and remove woody plants is essential to maintaining suitable breeding and foraging habitat for Mazama pocket gophers. Although Mazama pocket gophers are known to eat weedy forbs and grasses, and while use of certain equipment can destroy burrows, nests, and young, as well as removing above-ground forage plants, the removal of certain noxious weeds, invasive plants, and woody vegetation and mowing to maintain low vegetation height will help to maintain the open, short-statured vegetation required by Mazama pocket gophers. Similarly, herbicide use to reduce noxious weeds and invasive plants or encroaching woody plants, provides the same benefit, if applied selectively. In association with these vegetation management activities, the repair and maintenance of fences along roadside rights-of-way may be helpful in terms of clearly delineating the area targeted for management, as well as assisting in containment of woody plants or exclusion of potential predators.

Many routine vegetation management activities along roadsides of highways and roads are beneficial to the four Thurston/Pierce subspecies, because they effectively

mimic the disturbance regimes that historically maintained the early seral conditions preferred by *Mazama* pocket gophers. Such activities include those aimed at removing or controlling encroachment of woody plants, and mowing or use of herbicides to control noxious weeds and invasive plants, which results in the maintenance of the short-statured vegetation preferred by pocket gophers. The Service wishes to encourage the continuation of such activities, because there are areas known to be occupied by pocket gophers along the roadsides of highways and roads within the range of the four Thurston/Pierce subspecies of the *Mazama* pocket gopher, and in addition to maintaining safe conditions for motorists, these management actions provide for the conservation of the pocket gophers by actively maintaining suitable habitat conditions for the listed subspecies.

Section 9 of the Act provides general prohibitions on activities that would result in take of a threatened species. These prohibitions will apply to the four Thurston/Pierce subspecies of the *Mazama* pocket gopher upon the effective date of this final listing rule, at which point landowners and managers will need to consider how their activities may affect the species and whether that activity may result in an illegal take. However, the Service recognizes that vegetation management for the purposes of maintaining safe highway and roadside conditions, even with the potential to inadvertently take individual *Mazama* pocket gophers on occasion, is necessary and has the additional benefit of restoring and maintaining habitat in the early seral condition preferred by the pocket gophers. The Service recognizes that in the long term, it is a benefit to the *Mazama* pocket gopher to encourage this active management that contributes to the control of

woody plants and maintenance of short-statured vegetation in areas occupied by pocket gophers.

We believe that a 4(d) rule for roadside right-of-way maintenance activities on Federal and non-Federal highways and roads is necessary and advisable to further the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher by encouraging managers of roadside rights-of-way to manage these areas in ways that meet their safety management needs as well as helping maintain suitable habitat characteristics in areas occupied by the Mazama pocket gopher, without the additional concern of whether these beneficial activities may inadvertently violate section 9 of the Act. We therefore exempt take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers under section 9 of the Act resulting from routine vegetation management and fencing activities along roadside rights-of-way, as described under the **Regulation Promulgation** section, under section 9 of the Act below.

Provisions of the Special Rule

We determine that issuance of this special rule is necessary and advisable to provide for the conservation of the four Thurston/Pierce subspecies of the Mazama pocket gopher. We believe the actions and activities discussed above, while they may cause some level of harm to or disturbance to individuals of the four Thurston/Pierce subspecies of the Mazama pocket gopher, on balance create and improve habitat for the subspecies, create or foster conservation partnerships with landowners, and are important

elements in the subspecies' conservation and recovery efforts. Exempted activities include certain routine agricultural activities, certain existing routine civilian airport maintenance and wildlife hazard management activities, certain routine single-family residential activities, control of noxious weeds and invasive plants on non-Federal lands, and certain roadside rights-of-way maintenance activities.

We encourage any landowner concerned about potential take of listed species on their property that is not covered under the Special Rule (see also **§17.40 Special Rules – Mammals**, later in this document) to contact the Service to explore options for developing a safe harbor agreement or habitat conservation plan that can provide for the conservation of the species and offer management options to landowners, associated with a permit to protect the party from violations under section 9 of the Act (see **FOR FURTHER INFORMATION CONTACT**).

Required Determinations

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with listing a species as an endangered or threatened species under the Endangered Species Act. We published

a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994 (Government-to-Government Relations with Native American Tribal Governments; 59 FR 22951), Executive Order 13175 (Consultation and Coordination With Indian Tribal Governments), and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with tribes in developing programs for healthy ecosystems, to acknowledge that tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to indigenous culture, and to make information available to tribes.

References Cited

A complete list of references cited in this rulemaking is available on the Internet at <http://www.regulations.gov> and upon request from the Washington Fish and Wildlife Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this final rule are the staff members of the Washington Fish and Wildlife Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Regulation Promulgation

Accordingly, we amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as follows:

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 1531–1544; 4201–4245; unless otherwise noted.

2. Amend § 17.11(h) by adding entries for “Pocket gopher, Olympia (*Thomomys mazama pugetensis*),” “Pocket gopher, Roy Prairie” (*Thomomys mazama glacialis*),” “Pocket gopher, Tenino (*Thomomys mazama tumuli*),” and “Pocket gopher, Yelm (*Thomomys mazama yelmensis*)” in alphabetical order under Mammals to the List of Endangered and Threatened Wildlife to read as follows:

§ 17.11 Endangered and threatened wildlife.

* * * *

(h) * * *

SPECIES		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
* * * * *							
MAMMALS							
* * * * *							
Pocket gopher, Olympia	<i>Thomomys mazama pugetensis</i>	U.S.A. (WA)	Entire	T	828	17.95(a)	17.40(a)
Pocket gopher, Roy Prairie	<i>Thomomys mazama glacialis</i>	U.S.A. (WA)	Entire	T	828	NA	17.40(a)
Pocket gopher, Tenino	<i>Thomomys mazama tumuli</i>	U.S.A. (WA)	Entire	T	828	17.95(a)	17.40(a)
Pocket gopher, Yelm	<i>Thomomys mazama yelmensis</i>	U.S.A. (WA)	Entire	T	828	17.95(a)	17.40(a)
* * * * *							

3. Amend § 17.40 by adding paragraph (a) to read as follows:

§ 17.40 Special rules—mammals.

(a) Mazama pocket gophers (Olympia, Roy Prairie, Tenino, and Yelm) (*Thomomys mazama pugetensis*, *glacialis*, *tumuli*, and *yelmensis*)—(1) *Which populations of the Mazama pocket gopher are covered by this special rule?* This special rule covers the four Thurston/Pierce subspecies of the Mazama pocket gopher (Olympia, Roy Prairie, Tenino, and Yelm) (*Thomomys mazama pugetensis*, *glacialis*, *tumuli*, and *yelmensis*) wherever they occur.

(2) *What activities are prohibited?* Except as noted in paragraphs (a)(3) through (7) of this section, all prohibitions of §17.31 apply to the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers.

(3) *What activities are allowed on civilian airports?* Incidental take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers will not be a violation of section 9 of the Act, if the incidental take results from non-Federal routine maintenance activities in or adjacent to Mazama pocket gopher habitat and associated with airport operations on civilian airports. Routine maintenance activities include the following:

(i) Routine management, repair, and maintenance of runways, roads, and taxiways (does not include upgrades, or construction of new runways, roads, or taxiways, or new development at airports);

(ii) Hazing of hazardous wildlife;

(iii) Management of forage, water, and shelter to reduce the attractiveness of the area around airports for hazardous wildlife; and

(iv) Control or other management of noxious weeds and invasive plants through mowing, discing, herbicide and fungicide application, fumigation, or burning. Use of herbicides, fungicides, fumigation, and burning must occur in such a way that nontarget plants are avoided to the maximum extent practicable.

(4) *What agricultural activities are allowed on non-Federal lands?* Incidental take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers will not be a violation of section 9 of the Act, if the incidental take results from agricultural or horticultural (farming) practices implemented on such lands consistent with State laws on non-Federal lands. For the purposes of this special rule, farm means any facility, including land, buildings, watercourses, and appurtenances, used in the commercial production of crops, nursery or orchard stock, the propagation and raising of nursery or orchard stock, livestock or poultry, or livestock or poultry products.

(i) For the purposes of this special rule, an agricultural (farming) practice means a mode of operation on a farm that:

- (A) Is or may be used on a farm of a similar nature;
- (B) Is a generally accepted, reasonable, and prudent method for the operation of the farm to obtain a profit in money;
- (C) Is or may become a generally accepted, reasonable, and prudent method in conjunction with farm use;

- (D) Complies with applicable State laws;
 - (E) Is done in a reasonable and prudent manner.
- (ii) Accepted agricultural or horticultural (farming) practices include:
- (A) Grazing;
 - (B) Routine installation, management, and maintenance of stock water facilities such as stock ponds, berms, troughs, and tanks, pipelines and watering systems to maintain water supplies;
 - (C) Routine maintenance or construction of fencing;
 - (D) Planting, harvest, fertilization, harrowing, tilling, or rotation of crops (Disturbance to the soils shall not exceed a 12-inch (30.5-cm) depth. All activities that do not disturb the soil surface are also allowed, such as haying, baling, some orchard and berry plant management activities, etc.);
 - (E) Maintenance of livestock management facilities such as corrals, sheds, and other ranch outbuildings;
 - (F) Repair and maintenance of unimproved agricultural roads (This exemption does not include improvement, upgrade, or construction of new roads.);
 - (G) Placement of mineral supplements, plant nutrients, or soil amendments;
 - (H) Harvest, control, or other management of noxious weeds and invasive plants through mowing, disking, herbicide and fungicide application, fumigation, or burning (Use of herbicides, fungicides,

fumigation, and burning must occur in such a way that nontarget plants are avoided to the maximum extent practicable.); and

- (I) Deep tillage (usually at depths of 18–36 inches (45.7–91.4 cm), for compaction reduction purposes) occurring between September 1 and February 28, no more often than once in 10 years.

(5) *What noncommercial activities are allowed on single-family residential private land?* Incidental take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers will not be a violation of section 9 of the Act, if the incidental take results from noncommercial activities that occur in or adjacent to Mazama pocket gopher habitat on existing single-family residential properties. These activities include the following:

- (i) Harvest, control, or other management of noxious weeds and invasive plants through mowing, herbicide and fungicide application, fumigation, or burning. Use of herbicides, fungicides, fumigation, and burning must occur in such a way that nontarget plants are avoided to the maximum extent practicable;
- (ii) Construction and placement of fencing, garden plots, or play equipment; and
- (iii) Construction and placement of dog kennels, carports, or storage sheds less than 120 ft² (11.15 m²) in size.

(6) *What noxious weed and invasive plant control activities are allowed on non-Federal lands?* Incidental take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers will not be a violation of section 9 of the Act, if the incidental take results from routine removal or other management of noxious weeds and invasive plants. Routine removal or other management of noxious weeds and invasive plants

are limited to the following, and must be conducted in a way that impacts to nontarget plants are avoided to the maximum extent practicable:

- (i) Mowing;
- (ii) Discing;
- (iii) Herbicide and fungicide application;
- (iv) Fumigation; and
- (v) Burning.

(7) *What roadside right-of-way maintenance activities are allowed on Federal and non-Federal lands?* Incidental take of the Olympia, Roy Prairie, Tenino, and Yelm pocket gophers will not be a violation of section 9 of the Act, if the incidental take results from routine maintenance of roadside rights-of-way on Federal and non-Federal lands. Routine maintenance activities of roadside rights-of-way of highways and roads are limited to the following, and must be conducted in a way that impacts to nontarget plants are avoided to the maximum extent practicable:

- (i) Mowing;
- (ii) Mechanical removal of noxious weeds or invasive plants;
- (iii) Selective application of herbicides for removal of noxious weeds or
invasive plants; and
- (iv) Repair or maintenance of fences.

* * * * *

Dated: March 26, 2014

Signed: Rowan W. Gould

Acting Director, U.S. Fish and Wildlife Service

Billing Code 4310-55-P

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